Join Us For The Following Special Events at our SAS National Meeting During SciX In Atlanta

- Sunday, 10/21 at 7:00pm, **SAS Student Poster Competition* and SciX Opening Mixer**: Marriott Marquis
- Monday, 10/22 at 8:00pm, **SAS Student Members Only* Event at Braves All Star Grill**: Downtown Atlanta
- Tuesday, 10/23 **Special 60th Anniversary Sessions**: Marriott Marquis: Past, Present and Future: Celebrating 60 Years of SAS and Spectroscopy Innovations
- Tuesday, 10/23 at 7:00pm, **SAS Awards Ceremony**: Marriott Marquis Imperial A
- Tuesday, 10/23 at 8:00pm **SAS 60th Anniversary Wine and Cheese Celebration with Special Entertainment**: Marriott Marquis Imperial B (This event is open to SAS members only* from 8:00-9:30pm. A group SAS commemorative photo will be taken at 8:30pm. Doors will open at 9:30pm to non-members.)

*Not an SAS Member, but want to be part of our Member’s Only events? Join SAS today and be part of the next 60 years! Visit www.s-a-s.org or call 301-694-8122 to join today!
Attention Presenters: Check this final program to verify the schedule of your talk or poster.
Changes have occurred since the preliminary program. See Author Index, page 89.

TABLE OF CONTENTS

Welcome............................................................................................................................................. 2
SciX Chairs ........................................................................................................................................ 2
SciX / FACSS Chairs ...................................................................................................................... 3
FACSS / SciX Organization .............................................................................................................. 3
General Information ....................................................................................................................... 4
Speaker/Poster Information, Internet access, companion registration
Presenter Information, Special Events
Events of Special Interest to Students ........................................................................................ 5
Employment Bureau / Internet Café ............................................................................................. 5
Conference Regulations / Code of Conduct ................................................................................ 5
Program Sponsors ......................................................................................................................... 6
Awards
FACSS Distinguished Service Award.............................................................................................. 7
FACSS Student Award ..................................................................................................................... 8
FACSS Tomas Hirschfeld Scholar Award ...................................................................................... 9
FACSS Innovation Award ............................................................................................................... 10
FACSS Charles Mann Award ........................................................................................................ 11
Wiley Raman Student Award ......................................................................................................... 11
SAS Distinguished Service Award .................................................................................................. 12
SAS Honorary Membership Award .............................................................................................. 13
SAS Lester W. Strock Award ......................................................................................................... 13
SAS Barbara Stull Graduate Student Awards .............................................................................. 14
SAS Bruce R. Kowalski Award ...................................................................................................... 15
SAS William J. Poehlman Award .................................................................................................. 15
SAS / NASLIBS Award .................................................................................................................. 15
SAS Applied Spectroscopy William F. Meggers Award ............................................................... 16
SAS Fellows Award ....................................................................................................................... 17
Coblentz Society Honorary Membership .................................................................................... 18
Coblentz Society Clara Craver Award .......................................................................................... 19
Coblentz Society William G. Fateley Student Award ................................................................. 19
Coblentz Society Student Awards ............................................................................................... 20
Spectroscopy Magazine Emerging Scientist in Molecular Spectroscopy Award .................... 21
ANACHEM Award ....................................................................................................................... 21
Royal Society of Chemistry Emerging Investigator Award ....................................................... 21
IRDG Chalmers and Dent Student Award ............................................................................... 22
AES Blue Fingers Student Award ............................................................................................... 22
AES Lifetime Achievement Award ............................................................................................ 23
AES Mid-Career Award ............................................................................................................... 23
Previous FACSS/SciX Board and Meeting Chairs .................................................................... 24
Society and Committee Meetings ............................................................................................... 26
Exhibitors ....................................................................................................................................... 27
SciX Short Courses and Workshops ............................................................................................ 32
Program Overview ....................................................................................................................... 33
Technical Overview by Topic ........................................................................................................ 37
Program Highlights ...................................................................................................................... 41
Technical Program
Sunday ........................................................................................................................................... 42
Monday .......................................................................................................................................... 43
Tuesday ......................................................................................................................................... 56
Wednesday ..................................................................................................................................... 67
Thursday ....................................................................................................................................... 78
Friday ........................................................................................................................................... 88
Author Index .................................................................................................................................. 89
On behalf of the Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) it is our pleasure to welcome you to SciX 2018. We are excited to be in Atlanta this year, which is a brand-new venue for SciX, allowing us to expand the technical program, offer new workshops, and enable new networking opportunities.

We now have 14 FACSS member organizations working together to host a “right sized” conference. SciX 2018 is the National Meeting for the Society for Applied Spectroscopy, the AES Electrophoresis Society, the Coblentz Society, and is the home of International LIBS 2018. As in the past, the focus of SciX 2018 is the technical program organized under the leadership of the Program Chair, Karen Esmonde-White. The Sunday Keynote speaker is our opening event and features Matthew Savoca discussing the role of analytical chemistry in understanding the environmental impact of microplastics.

Throughout the SciX program and every morning, we honor our award-winning colleagues. Award winners, their presentations and sessions are prominently identified throughout the program and the SciX mobile app (download the app for the most up-to-date information). Equally important are the poster sessions that feature students, early-career professionals and seasoned scientists that allow for more in-depth, but relaxed discussions. Under the guidance of the Program Chair, the Section Chairs and Session Chairs have worked hard to organize symposia across many interesting topics and applications within the analytical sciences. The chairs also secure financial support from our sponsoring industrial partners. These funds go directly into the program to help bring in the best and brightest as our presenters. We also are pleased to honor the finalists in the competitive FACSS Innovation Award session on Thursday afternoon. We close out the technical program on Friday morning with special session entitled “SciFri: The Science of Science Fiction”.

A major goal for SciX is to support networking opportunities for every SciX attendee. Please be sure to check the program for all the networking opportunities that range from coffee breaks, lunch, poster sessions, and evening events. Everyone at SciX is welcome to the Wednesday night “The Great Science Fiction Exchange” all-inclusive event (food, drinks, entertainment).

SciX is here to meet your needs – please let us know how we did and how we can improve by filling out the survey after the conference ends. Also, many volunteers are required each year – if you want to join the team, please contact FACSS, SciX, or your member society and volunteer! In addition, the SciX 2018 team thanks Lola Priest and Jennifer Watson at the FACSS / SciX International Office.
FACSS and SciX CONFERENCE ORGANIZATION

Member Organizations of FACSS

AES Electrophoresis Society
American Chemical Society, Division of Analytical Chemistry
American Society for Mass Spectrometry
ANACHEM
Austrian Society of Analytical Chemistry
Coblentz Society
Council for Near Infrared Spectroscopy
Infrared and Raman Discussion Group
International Society of Automation-Analysis Division
International Society for Clinical Spectroscopy
North American Society for Laser-Induced Breakdown Spectroscopy
Royal Society of Chemistry Analytical Division
Society for Applied Spectroscopy
The Spectroscopical Society of Japan

2018 FACSS Executive Committee

Governing Board Chair
Fred LaPlant, 3M Biopharmaceutical Purification Business Unit, flaplant@mmm.com
Governing Board Chair Elect To be elected during SciX 2018
Past Governing Board Chair Steven Ray, SUNY Buffalo
Second Past Governing Board Chair Greg Klunder, LLNL Forensic Science Center
Secretary Glen Jackson, West Virginia University
Treasurer Mark Druy, Galvanic Applied Sciences USA

SciX 2018 Program Section Chairs

Awards Garth Simpson, Purdue University
International LIBS 2018 Matthieu Baudelet, University of Central Florida
Francois Doucet, Elemission
AES Electrophoresis Alexandra Ros, Arizona State University
Blanca Lapizco-Encinas, Rochester Institute of Technology
Atomic Spectroscopy Jorge Pisonero, Universidad de Oviedo
Biomedical and Bioanalytical Bradford Clay, bioMerieux
Chemometrics Juergen Popp, Leibniz Institute of Photonic Technology e.V. Jena
Contemporary Issues in Analytical Science Peter Harrington, Ohio University
Mass Spectrometry Rebecca Airmet, Airmet Editing
Molecular Spectroscopy Christopher Hendrickson, National High Magnetic Field Laboratory
Nanotechnology Curt Marcott, Light Light Solutions
Pharmaceutical Analysis Michael George, University of Nottingham
Weizhao, University of Arkansas at Little Rock
Process Analytical Technology Anna Luczak, Bristol-Myers Squibb
John Wasylyk, Bristol-Myers Squibb
Raman Spectroscopy James Rydzak, Specere Consulting
Security and Forensics Xiaoyun (Shawn) Chen, Dow Chemical
SPSJ - Frontiers of Deep- and Far Ultraviolet Spectroscopy Duncan Graham, University of Strathclyde
Surface Plasmon Resonance Ian R. Lewis, Kaiser Optical Systems, Inc.
Pavel Matousek, Rutherford Appleton Laboratory
Greg Klunder, Lawrence Livermore National Laboratory
Yukihiro Ozaki, Kwansei Gakuin University
Jean-Francois Masson, Université de Montreal
LOCATION of all plenaries, symposia, short courses, workshops and exhibits is at the Atlanta Marriott Marquis, 265 Peachtree Center Avenue, Atlanta, Georgia.

PRESENTERS must check this final program to confirm schedule for your talk or poster. Author index is on page 89.

SPEAKERS should bring slides on USB (flash drive). Arrive at your session room 30 minutes before session start to connect your USB stick to session room laptop (PC running Windows 10 and MS Office 2016 with PowerPoint). There is a Speaker Practice Room in A705 where speakers may preview presentation slides on a PC laptop (identical to session room PC laptops). Speakers may NOT present from their own laptop.

ORAL SYMPOSIA are scheduled Monday through Thursday.

9:15 - 10:55 am
1:30 - 3:10 pm
3:50 - 5:30 pm

The conference concludes at 9:45 am following the Friday morning symposium.

POSTER SESSIONS

Sunday, Imperial B

7:15 - 9:00 pm SAS Student Poster Session & SciX Welcome Mixer
Poster set up 5:30 - 6:00 pm (before plenary), remove at 9:00 pm.

Monday Posters, Imperial B

Tuesday and Wednesday Posters, Exhibit Hall (Atrium Ballroom)

Thursday Posters, Imperial B

Monday through Thursday poster schedule:
10:00 - 11:00 am Set-up poster on your designated day
11:00 am - 12:00 pm Poster Session
3:10 - 3:50 pm Poster viewing and break
3:50 pm Remove your poster on your designated day

Poster presenters are required to be present at BOTH morning and afternoon sessions on their designated days. This will extend the time for discussion and judging for student awards.

SHORT COURSES / WORKSHOPS offer a variety of introductory and fundamental topics geared toward students. Visit the SciX website or conference registration desk to register. Special discounted rates available for students. You must register for a SciX workshop at the conference registration desk.

EXHIBITS are located in the Exhibit Hall (Atrium Ballroom) and will be open as follows. See page 27 for details.

Monday (Opening Reception) 5:30 pm – 7:30 pm
Tuesday 10:00 am - 4:30 pm
Wednesday 10:00 am - 4:00 pm

WHAT’S HOT VENDOR SYMPOSIA

Sunday, 4:50 - 6:00 pm, Imperial A
Tuesday, 11:40 am - 1:10 pm, Exhibit Hall
Wednesday, 11:40 am - 1:10 pm, Exhibit Hall

COMPLIMENTARY LUNCH is offered at noon in Exhibit Hall (Atrium Ballroom) on Tuesday and Wednesday for all registered conferees. Registered attendee must be present. Ticket is required. (One ticket per lunch per person.)

BREAKS

Monday breaks, Imperial B
11:00 am – 12:00 pm & 3:10 - 3:50 pm
Tuesday & Wednesday breaks, Exhibit Hall (Atrium Ballroom)
11:00 am - 12:00 pm & 3:10 - 3:50 pm
Thursday breaks, Imperial B
11:00 am - 12:00 pm & 3:10 - 3:50 pm

INTERNET ACCESS is available in meeting area. Select FACSS_SciX and use password facss2018 (all lower case).

COMPANION REGISTRATION does not include access to symposia. Cost is $75 and includes Sunday Evening Welcome Mixer, Monday 9:00 am coffee/pastries, Exhibit Hall Opening Reception, and Wednesday Conference All Inclusive Event.

SPECIAL EVENTS

SUNDAY

8:00 am SciX Bicycle Ride, contact klunder1@llnl.gov
4:50 pm What’s Hot Vendor Presentations, Imperial A
6:15 pm SciX 2018 Keynote Session, Imperial A
Matthew Savoca, Hopkins Marine Station, Stanford University
7:15 pm Welcome Mixer and SAS Sponsored Student Poster Session. FACSS, Coblenz, AES, Wiley, and SAS Student Award Presentations, Imperial B

MONDAY

7:45 am Awards and Plenary Session, Imperial A
8:00 am International LIBS Plenary Lecture, Vincent Motto-Ros; Institut Lumière Matière, Université Lyon
8:30 am 2018 Analyst Emerging Investigator Lectureship from RSC, Wei Min, Columbia University
12:00 pm Coblenz Speed Mentoring, Room A602
5:30 pm Exhibit Opening and Reception (wine, beer, light hors d’oeuvres), Exhibit Hall (Atrium Ballroom)

TUESDAY

7:45 am Awards and Plenary Session, Imperial A
8:00 am Charles Mann Award for Applied Raman Spectroscopy, Andrew Whitley, HORIBA
8:30 am Applied Spectroscopy William F. Meggers Award, S. Michael Angel, University of South Carolina
11:40 am What’s Hot Vendor Presentations, Exhibit Hall (Atrium Ballroom)
12:00 pm Complimentary lunch, ticket required, Exhibit Hall
7:00 pm SAS Awards, Imperial A, followed by 60th Anniversary Wine & Cheese Reception (by invitation), Imperial B

WEDNESDAY, continued

7:45 am Awards and Plenary Session, Imperial A
8:00 am Spectroscopy Emerging Leader in Molecular Spectroscopy Award, Megan Thielges, Indiana University
8:30 am AES Electrophoresis Mid-Career Award Plenary, Michael Roper, Florida State University
11:40 am What’s Hot Vendor Presentations, Exhibit Hall (Atrium Ballroom)
12:00 pm Complimentary lunch, ticket required, Exhibit Hall
6:30 pm Wednesday Evening All Inclusive Event, Imperial B. Conference badge required.

THURSDAY

7:45 am Awards and Plenary Session, Imperial A
8:00 am ANACHEM Award, Susan Lunte, University of Kansas
8:30 am Lester W. Strock Award, Javier Laserna; University of Málaga
3:50 pm FACSS Distinguished Service Award and FACSS Innovation Award Session, Imperial A

FRIDAY

7:45 am Awards and Plenary Session, A703-704
2018 Innovation Award announcement
8:00 am The Science of Science Fiction
EVENTS OF SPECIAL INTEREST TO STUDENTS

SUNDAY
- Welcome Mixer, 7:15 - 9:15 pm, Imperial B
- SAS Sponsored Poster Session
  Student Award presentations for FACSS, Coblentz, AES, Wiley, and SAS students

MONDAY through FRIDAY
- FACSS Student Poster Awards will be presented daily, Imperial A. Winners announced at 7:50 am each day before Plenary Session.

MONDAY
- Coblentz Speed Mentoring, 12:00 - 1:15 pm (seating is limited), Room A602
- SAS Student Member Event, 8:00 - 1:00 pm, Braves All Star Grill

MONDAY THROUGH THURSDAY
- Employment Bureau, Registration Area, Atrium level

EMPLOYMENT BUREAU / INTERNET STATION
The Employment Bureau is located in the registration area in conjunction with the internet station Monday through Thursday. Computers and printers will be available.

EMPLOYERS: Bring either hard copy of job opportunities to display on poster board in the employment area. There will be copies of resumes for you to review or to take with you.

JOB SEEKERS: Bring copies of your resume to be made available for prospective employers to review.

A message board will be available for employers and job seekers to communicate.

CONFERENCE REGULATIONS AND CODE OF CONDUCT
The following regulations are in the best interest of the conference. FACSS/SciX reserves the right to revoke conference badge and attendance to the meeting.

General:
1. There is no smoking in any conference areas.
2. An official name badge is required at all times.
3. No advertising may be placed in the conference areas.
4. Only official exhibitors may display in the Exhibit Hall.
5. No demonstration of instrumentation or distribution of any type of literature is allowed outside the Exhibit Hall.

While in Sessions:
1. All devices including cell phones must be silenced.
2. No talking during oral presentations and awards ceremonies.
3. No Photography of PowerPoint presentations or Posters.
4. No distribution of product/meeting literature.

Expected Behavior throughout the Conference:
1. Be respectful and considerate of others and the facilities.
2. Be mindful of your surroundings and of your fellow participants.
3. Alert a SciX volunteer if you notice a dangerous situation or someone in distress.

Unacceptable Behavior:
1. Harassment, intimidation or discrimination in any form will not be tolerated.
2. Physical or verbal abuse of anyone attending or involved with the conference is not tolerated.
3. Alert a SciX volunteer if you witness or are the subject of unacceptable behavior.
### PROGRAM and CONFERENCE SPONSORS
SciX 2018 and FACSS greatly appreciate the support of sponsors

#### Platinum Sponsors

**Agilent Technologies • Bristol-Myers Squibb**

**Kerith Foundation**

#### GENERAL CONFERENCE AND MEDIA SPONSORS

<table>
<thead>
<tr>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Pharmaceutical Review</td>
</tr>
<tr>
<td>Applied Spectroscopy</td>
</tr>
<tr>
<td>Bio-Pharma Asia</td>
</tr>
<tr>
<td>European Pharmaceutical Review</td>
</tr>
<tr>
<td>Photonics Media</td>
</tr>
<tr>
<td>Spectroscopy Magazine</td>
</tr>
<tr>
<td>The Analytical Scientist/Texere</td>
</tr>
</tbody>
</table>

#### ACS

<table>
<thead>
<tr>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACS Division of Analytical Chemistry</td>
</tr>
</tbody>
</table>

#### ATOMIC SPECTROSCOPY

<table>
<thead>
<tr>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agilent Technologies, Inc.</td>
</tr>
<tr>
<td>Applied Spectra, Inc.</td>
</tr>
<tr>
<td>Elemental Scientific</td>
</tr>
<tr>
<td>Elemental Scientific Lasers</td>
</tr>
<tr>
<td>HORIBA Scientific</td>
</tr>
<tr>
<td>IonSense, Inc.</td>
</tr>
<tr>
<td>ISAS e.V.</td>
</tr>
<tr>
<td>Meinhard</td>
</tr>
<tr>
<td>Royal Society of Chemistry</td>
</tr>
<tr>
<td>Tofwerk AG</td>
</tr>
</tbody>
</table>

#### BIOMEDICAL/BIOANALYTICAL

<table>
<thead>
<tr>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>InfectoGnostics Research / Leibniz Health Technologies</td>
</tr>
</tbody>
</table>

#### CHEMOMETRICS

<table>
<thead>
<tr>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eigenvector Research, Inc.</td>
</tr>
<tr>
<td>Infometrix, Inc.</td>
</tr>
<tr>
<td>LECO Corporation</td>
</tr>
<tr>
<td>Ohio University Center for Intelligent Chemical Instruments</td>
</tr>
<tr>
<td>Society for Applied Spectroscopy</td>
</tr>
</tbody>
</table>

#### FORENSICS

<table>
<thead>
<tr>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agilent Technologies, Inc.</td>
</tr>
<tr>
<td>Applied Spectra, Inc.</td>
</tr>
<tr>
<td>B&amp;W Tek</td>
</tr>
<tr>
<td>Bruker Optics</td>
</tr>
<tr>
<td>JASCO, Inc.</td>
</tr>
<tr>
<td>Perkin Elmer</td>
</tr>
<tr>
<td>Photothermal Spectroscopy Corp</td>
</tr>
<tr>
<td>Rigaku Analytical Devices</td>
</tr>
<tr>
<td>Si-Ware Systems</td>
</tr>
<tr>
<td>Thermo Fisher Scientific</td>
</tr>
</tbody>
</table>

#### INFRARED SPECTROSCOPY

<table>
<thead>
<tr>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anasys Instruments/Bruker</td>
</tr>
<tr>
<td>Photothermal Spectroscopy Corp</td>
</tr>
<tr>
<td>ThorLabs</td>
</tr>
</tbody>
</table>

#### MASS SPECTROMETRY

<table>
<thead>
<tr>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bruker Daltonics</td>
</tr>
<tr>
<td>Thermo Fisher Scientific</td>
</tr>
<tr>
<td>Waters Corporation</td>
</tr>
</tbody>
</table>

#### PHARMACEUTICAL

<table>
<thead>
<tr>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaiser Optical Systems, Inc.</td>
</tr>
<tr>
<td>Perkin Elmer</td>
</tr>
<tr>
<td>Tornado Spectral Systems</td>
</tr>
</tbody>
</table>

#### PROCESS ANALYTICAL

<table>
<thead>
<tr>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPACT</td>
</tr>
<tr>
<td>Hellma USA, Inc.</td>
</tr>
<tr>
<td>MarqMetrix</td>
</tr>
<tr>
<td>Metrohm USA</td>
</tr>
<tr>
<td>Mettler-Toledo Autochem</td>
</tr>
<tr>
<td>Society for Applied Spectroscopy</td>
</tr>
<tr>
<td>Thermo Fisher Scientific</td>
</tr>
<tr>
<td>Viavi Solutions</td>
</tr>
</tbody>
</table>

#### RAMAN

<table>
<thead>
<tr>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agilent Technologies, Inc.</td>
</tr>
<tr>
<td>BioTools, Inc.</td>
</tr>
<tr>
<td>HORIBA Scientific</td>
</tr>
<tr>
<td>John Wiley &amp; Sons</td>
</tr>
<tr>
<td>Kaiser Optical Systems, Inc.</td>
</tr>
<tr>
<td>Ondax, Inc.</td>
</tr>
<tr>
<td>Photonics Industries</td>
</tr>
<tr>
<td>Princeton Instruments, Inc.</td>
</tr>
<tr>
<td>Renishaw</td>
</tr>
<tr>
<td>Royal Society of Chemistry</td>
</tr>
<tr>
<td>Wasatch Photonics</td>
</tr>
</tbody>
</table>

#### RSC

<table>
<thead>
<tr>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Royal Society of Chemistry</td>
</tr>
</tbody>
</table>

#### SPECIAL SESSIONS

<table>
<thead>
<tr>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry in Art and Archaeology</td>
</tr>
<tr>
<td>Bruker Elemental</td>
</tr>
<tr>
<td>Far Western Anthropological Research Group, Inc.</td>
</tr>
<tr>
<td>Meinhard</td>
</tr>
<tr>
<td>SciAps</td>
</tr>
<tr>
<td>Society for Archaeological Sciences</td>
</tr>
<tr>
<td>Tribute to the Life and Work of Theodore Rains</td>
</tr>
<tr>
<td>High Purity Standards, Inc.</td>
</tr>
<tr>
<td>Joint Pittcon/FACSS Session: Analysis of Microplastic I/II Pittcon 2019</td>
</tr>
<tr>
<td>Past, Present and Future: Celebrating 60 Years of SAS and Spectroscopy Innovations</td>
</tr>
<tr>
<td>Society for Applied Spectroscopy</td>
</tr>
</tbody>
</table>

#### SPSJ

<table>
<thead>
<tr>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kwansei Gakuin University</td>
</tr>
</tbody>
</table>

#### STUDENT SPONSORS

<table>
<thead>
<tr>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mary and Mike Carrabba</td>
</tr>
<tr>
<td>Meinhard-Elemental Scientific</td>
</tr>
<tr>
<td>Society for Applied Spectroscopy</td>
</tr>
</tbody>
</table>
FACSS DISTINGUISHED SERVICE AWARD

Awarded to an individual(s) for recognition of exceptional, long-term service to the FACSS organization. The 2018 recipient has served with excellence in many different capacities and contributed to the continuing success of FACSS through consistent dedication and sacrifice.

Ian R. Lewis
Kaiser Optical Systems

Presentation: Thursday 3:45 pm, Imperial A

Ian R. Lewis was born in the UK in December of 1968 and is the Director of Marketing & Product Management at Kaiser Optical Systems, Inc.

Ian was funded to attend his first FACSS conference in 1993 in Detroit as a post-doc in Peter Griffiths’s lab. He started volunteering for FACSS in 1995 and organized his first session as part of the Raman symposium at Kansas City in 1996. Since 1996 he has served FACSS in many different capacities:

- Raman Session organizer (1996-present)
- SciX Raman Symposium co-chair (2013-present)
- FACSS Awards chair (2006 Lake Buena Vista)
- FACSS Program chair (2007 Memphis)
- FACSS Governing Board Chair (2012-2013)
- FACSS Executive Committee (2009-2017)
- FACSS Site Selection Committee member (2017-present)
- FACSS Site Selection Chair (2018-present)
- FACSS Treasurer-elect 2018 (Term 2019-2021)

FACSS Workshop Instructor “Analytical Raman Spectroscopy” with Brian Marquardt and Jeremy Shaver (2006-2011)
- FACSS Governing Board delegate on many occasions representing Anachem, Coblentz, RSC AD, and SAS.
- FACSS Governing Board delegate on many occasions representing Anachem, Coblentz, RSC AD, and SAS.
- Organizational representative to Spring SciX (Glasgow 2018)

During his tenure at FACSS, he edited the Program chair guide (originally created by Mark Hayes), and he co-wrote with Doug Gilman, the Awards chair guide to train future Award chairs in their roles and responsibilities. In 2002 he co-founded the Charles Mann award (with Mike Carrabba) to recognizes achievements in Analytical Raman and contributions to the Raman program at FACSS/SciX. He overhauled the organization’s By-laws regarding disbursements (in conjunction with Jim Rydzak) and subsequently on surplus (with Becky Dittmar) to produce clear guidelines on surpluses, forms and how a FACSS surplus benefits the member organizations. While on the EC he extensively updated the Operations Manual of the organization. Ian also participated in the FACSS retreats to address needs of member organization and to chart a future course for FACSS and its conference. In conjunction with Mark Hayes, Doug Gilman and Ignite Media, he participated in the successful rebranding of the conference from FACSS to SciX. With Mark Hayes and Cindi Lilly he participated in the transition to a new website provider and creation for two new websites for the SciX conference and FACSS. In 2012 with the leadership team of Brandye Smith-Goettler, Steve Ray, Mike Carrabba, Luisa Profeta, and Mark Hayes he helped in executing the first SciX meeting.

In his first year as Governing Board Chair Ian started an appeal for old FACSS material which allowed FACSS to archive all of the old FACSS conference programs and make them available for prosperity (based on major contributions from Paul Bourassa, Keith Olson, and Gary & Susan Heiftje).

In support of FACSS’s role beyond SciX, he co-organized with Mike George, John Chalmers, and Tony Moffat the first FACSS co-organized meeting outside North American (Advances in Raman Spectroscopy for Pharmaceutical Analysis) held in London in May 2012 in conjunction with the IRDG, the RSC Molecular Spectroscopy Group, and the Joint Pharmaceutical Analysis Group (JPAG).

During Ian’s time in the leadership of FACSS, he directed funds to support FACSS’s outreach initiatives aimed at promoting scientific collaboration between organizations. This included FACSS sponsored lectures and speaker support at ICORS and ICAVS conferences. He started new initiatives and directed to completion collaboration initiatives started by past Governing Board Chairs (Becky Dittmar, Doug Gilman, Mark Hayes, and Greg Klunder). As Governing Board Chair he created the new member organization application process and oversaw the expansion of FACSS from 7 member organizations to 12 member organizations (welcoming NASLIBS, AES, IRDG, SpSJ, and CNIRS).

Currently Ian contributes to FACSS/SciX by chairing the three-member Site Selection committee (composed of Gary Brewer and Mike Carrabba), acts as an advisor to the current EC, and co-chairs the Raman symposium at SciX (with Pavel Matousek and Duncan Graham).

Previous Distinguished Service Awardees

<table>
<thead>
<tr>
<th>Year</th>
<th>Awardees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>Edward Brame and Syd Fleming</td>
</tr>
<tr>
<td>1994</td>
<td>L. Felix Schneider</td>
</tr>
<tr>
<td>2001</td>
<td>David Coleman</td>
</tr>
<tr>
<td>2003</td>
<td>Jeanette Grasselli Brown</td>
</tr>
<tr>
<td>2009</td>
<td>Paul Bourassa and Mike Carrabba</td>
</tr>
<tr>
<td>2010</td>
<td>Scott McGeorge and Alexander Scheliner</td>
</tr>
<tr>
<td>2011</td>
<td>Jon W. Carnahan and Patricia B. Coleman</td>
</tr>
<tr>
<td>2012</td>
<td>Bruce Chase and O. Karmie Galle</td>
</tr>
<tr>
<td>2013</td>
<td>Mark A. Hayes and Cynthia M. Lilly</td>
</tr>
<tr>
<td>2014</td>
<td>Ron Williams and Edward J. Havlena</td>
</tr>
<tr>
<td>2015</td>
<td>Michael Blades, Gary Brewer and Keith L. Olson</td>
</tr>
<tr>
<td>2016</td>
<td>John Chalmers, John Graham and Jim Rydzak</td>
</tr>
<tr>
<td>2017</td>
<td>Diane Parry</td>
</tr>
</tbody>
</table>
FACSS STUDENT AWARD

The FACSS Student Award recognizes outstanding contributions by a Ph.D. or M.Sc. candidate.

Edward D. Hoegg
Clemson University

Presentation: Sunday Welcome Mixer

Edward D. Hoegg is a graduate student at Clemson University where he works for Dr. R. Kenneth Marcus. Ed is originally from Allentown, Pennsylvania and earned his B.S. in Chemistry from Washington College, in Chestertown, MD. Following the completion of his undergraduate education, he was awarded a Science and Technology Policy Fellowship at the U.S. Department of Energy (DOE) where he worked on the SunShot Initiative, a national initiative to reduce the cost of solar energy. During his three year tenure working on the SunShot Initiative, his research focused on thermal energy storage for concentrating solar power. While at Clemson, he has been given the opportunity to conduct research at Pacific Northwest National Laboratory (PNNL) where he remains a PhD Intern in the DOE International Nuclear Safeguard’s Human Capital Development Program. With the goal of developing a field deployable mass spectrometer capable of meeting the International Atomic Energy Agency’s (IAEA) International Target Values (ITVs) for Measurement Uncertainties in Safeguarding Nuclear Materials, Ed’s research has been focused on interfacing the liquid sampling-atmospheric pressure glow discharge (LS-APGD) with Orbitrap mass spectrometers for high accuracy, high precision isotope ratio measurements. Although this work has relied on using two large unknowns in the field of isotope ratio mass spectrometry, it has offered a number of surprising results. To date, for each of the depleted, natural and enriched uranium samples measured, the corresponding ITV for that sample type has been exceeded. As part of his research, and to continue his education in nuclear safeguards, Ed has worked at Los Alamos National Laboratory as a visiting scientist and was selected as a participant in the 2017 Japan Nuclear Facilities Experience. In addition to using the LS-APGD for isotope ratio measurements, Ed has used the ion source for detecting metals in cell media samples, in a preliminary study that was completed in a partnership with Merck & Co. For his work Ed has received a number of awards that recognize his work both in and out of the lab, including Washington College’s James R. Miller Award for Excellence in Chemistry, a Certificate of Merit presented by the Defense Threat Reduction Agency, and the Chemistry Outreach Award and Graduate Faculty Award presented by the Chemistry Department at Clemson University.

FACSS STUDENT AND TOMAS HIRSCHFELD SCHOLAR AWARDS
CALL FOR 2019 APPLICATIONS

The Tomas Hirschfeld Scholar and the FACSS Student Awards recognize the most outstanding papers submitted to FACSS by a graduate student. Recipients receive financial support to help them attend the SciX 2019. To have your presentation considered for one of these awards, students should submit abstracts through the SciX website and indicate in the drop down menu their interest in these awards.

The submission process involves submitting an abstract, completing the website submission form, and sending the following to facss@facss.org.

a) Application form, available on the SciX website (www.scixconference.org)
b) Copy of abstract submitted to SciX
c) Two letters of nomination, one by the student’s mentor. An explanation of the inventive contributions by the student to the work should be given. Creativity was a primary characteristic of Tomas Hirschfield’s work.
d) Copy of the candidates résumé
e) Copy of the candidate’s graduate transcript
f) Copies of reprints and/or preprints of research accomplished.

The SciX website will begin accepting abstracts and applications for FACSS student awards in January 2019. Go to www.scixconference.org
Katie Spalding is currently a final year Ph.D. student, working within the Spectral Analytics Laboratory led by Dr. M. J. Baker in the Technology and Innovation Centre, Department of Pure and Applied Chemistry, University of Strathclyde. Her research on “Developing Spectroscopic Biofluid Diagnosis, Monitoring and Therapeutic Profiling of Melanoma Patients” aims to combat problems with the late diagnoses of melanoma through the development of a blood-based spectral profile for the disease. Katie is originally from Glasgow and in 2015, she was awarded a 1st Class MChem (Hons) in Forensic & Analytical Chemistry from the University of Strathclyde, where she received the SCI Scotland Prize in Analytical Chemistry for the best undergraduate in Analytical Chemistry. Within her first year of postgraduate study she was invited to give younger member presentation in Minneapolis at a special session on biofluid spectroscopy held at SciX. Katie has published in a clinical journal (Brain & Behav., 6, 1-8, 2016), has contributed to two submitted patent applications and presented 5 oral/poster presentations at national and international conferences. Katie obtained funding from the ScotCHEM Early Career Researcher scheme to carry out research abroad at François Rabelais University. Katie was also selected to take part in the Frontrunner leadership programme, leadership development for 3rd level students who have a track record of leading change. In addition, she is committed to helping younger students and widening participation in further education. As such she is a STEM ambassador, student mentor, demonstrator and has been chosen to take part in the Accelerate programme as a mentor for the last 2 years running. Accelerate is a one-week programme for widening access to higher education for pupils thinking of going to university. Katie has dedicated her final year of postgraduate study to carrying out a large-scale patient study. Through the analysis of melanoma patient serum samples, she hopes to use ATR-FTIR spectroscopy to monitor patient disease progression and response to therapy. Katie’s keen interest in the translation of spectroscopy to the clinic is apparent from her time spent at Royal Preston Hospital in addition to full-time study at the Department of Pure and Applied Chemistry at the University of Strathclyde. Katie’s presence during the melanoma clinics provided Katie with the opportunity to interact with patients and has given her a strong drive to make a difference, working with clinicians to improve patient mortality and morbidity.
The FACSS Innovation Award will be given for the most innovative and outstanding new research advancements debuted at the SciX Conference. All program areas are included. Only research findings presented for the first time in the public domain qualify for entry (work based on submitted papers not yet published electronically or in print at the time of abstract submission also qualify). Papers submitted for SciX will be considered for these awards — authors can check the appropriate box for their papers to be entered. Finalists will be selected for presentations at the SciX conference in special award sessions. Award winner(s) will be selected after the award sessions are concluded. Each award includes: A cash prize of $1,000; a plaque; and publicity.

2017 INNOVATION AWARD WINNER
Optical Reflection and Waveguiding of Sound in Free Space
Daniel Kazal
University of Maryland Baltimore County

3:50 PM (948) PCR-Free miRNA Profiling Technologies: A Liquid Biopsy Platform; Hsueh-Chia Chang; Satyajyoti Senapati; Ceming Wang; Zeinab Ramshani; Katherine Richards; David Go; Reggie Hill; University of Notre Dame

4:20 PM (949) Detection of anti-E. coli Heavy-Metal Conjugated Antibodies on Lateral Flow Assay Material Using Laser-Induced Breakdown Spectroscopy (LIBS) and Laser Ablation Inductively Coupled Optical Emission Spectroscopy (LA-ICP-OES); Carmen Gondhalekar; Iyll-Joon Doh; Bartek Rajwa; Euiwon Bae; Valery Patsekin; Larry Stanker; Xianglei Mao; Vassilia Zorba; Richard Russo; J. Paul Robinson; Purdue University; Lawrence Berkeley National Laboratory; United States Department of Agriculture

4:50 PM (950) Electrically Triggered Water-in-Oil Droplets for Serial Femtosecond Crystallography; Alexandra Ros; Daihyun Kim; Austin Echelmeier; Jovani Cruz Villarreal; Sahir Gandhi; Ana Egatz-Gomez; School of Molecular Sciences, ASU; Center for Applied Structural Discovery, ASU

5:20 PM (951) Interband Cascade Laser Frequency Combs: A New Tool for Miniaturization; Benedikt Schwarz; Johannes Hillbrand; Maximilian Beiser; Anne Schade; Hermann Detz; Maxwell Andrews; Sven Höfling; TU Wien; University Würzburg; CEITEC

AN ALL INCLUSIVE EVENT
6:30 PM Wednesday, Imperial B
SciX 2018 name badge is required. Don’t forget your drink ticket.

Join us for the SciX 2018 Gala Wednesday, October 24

The Great Science Fiction Exchange

Next year: October 13 - 18, 2019, Palm Springs, CA
Andrew Whitley has concentrated his career in vibrational spectroscopy product development and sales. He is currently the Vice President of Sales and Business Development at HORIBA Scientific in New Jersey, where he has worked since 2000. Prior to this he was the US Raman Product Manager at Renishaw. He also worked for Renishaw in the UK and prior to that he was at Bruker during the FT-Raman breakthroughs of the early 1990’s. Andrew was recently promoted to Vice President of Business Development and remains responsible for sales at HORIBA Scientific in the US. In his current role Andrew is responsible for marketing at HORIBA Scientific, and in this capacity is charged with ensuring important applications and opportunities for product development are identified and properly assessed. This role requires networking and collaboration across a wide range of customers and markets to accurately monitor market needs and opportunities. The opportunity for dedicated application products using spectroscopy are evolving and emerging at a rapid rate with the advancement of spectroscopy and spectroscopy components. This is an exciting role and time. During the last fifteen years Andrew has been involved in the marketing and development of key Raman products including the LabRAM IR - combined Raman/FT-IR microscope, the LabRAM ARAMIS fully automated Raman microscope, the LabRAM HR NANO combined Raman/AFM tool, the cost effective XploRA Raman microscope and the LabRAM Evolution. Most recently the MacroRAM and AnyWhereRaman bench top Raman systems were released at the beginning of 2018. Andrew is also excited to be involved in the development and application of the new fluorescence technique of Absorbance-Transmittance Excitation Emission Matrices (A-TEEM). The recent acquisition by HORIBA of AIST-NT Inc. an advanced and growing AFM company, based in Novato, CA is resulting in exciting application and product developments in both AFM and nano-spectroscopy. Andrew has authored and co-authored many papers, articles and book chapters describing the use of Raman spectroscopy and other spectroscopic techniques for research and applied applications in academia and industry. Every year Andrew presents at numerous scientific conferences. He is a regular participant, presenter and session organizer at SciX (FACSS), Pittcon, EAS and numerous other conferences and meetings in the US and Europe.

Since moving to the US in 1995 Andrew has been very active with both the Society of Applied Spectroscopy (SAS) and SciX (FACSS). Andrew has organized and helped organize numerous scientific sessions at SciX over the years including many Raman sessions, of course, but also AFM/Raman, nano-spectroscopy, GD-OES and fluorescence sessions. Since the end of 2017 Andrew has been the Marketing Chair for SAS responsible for the membership, publicity and web (including social media) committees – in general, all communications with members about SAS. He is currently working closely across all areas of SAS to help make the 60th Anniversary of SAS celebrations and events a success. This includes special SAS sessions and an extra special member event at SciX in Atlanta in October. 2018 is a very good year to be a member of the Society for Applied Spectroscopy. Andrew was born and educated in the UK. His qualifications include BSc(Hons), Chemistry and MPhil. Ph.D. “Vibrational Spectroscopic Studies on the Model Lubricant 2-Ethylhexyl Benzoate”, both degrees were obtained at the University of Durham in the UK. Andrews professional memberships include the Society for Applied Spectroscopy, the Coblentz Society, the Royal Society of Chemistry and the UK Infrared and Raman Discussion Group. Outside of career obligations, Andrew enjoys spending time with his wife, Catherine, family and friends. A supporter of the Nottingham Forest football team and the San Francisco Giants baseball team, Andrew often attends games in his spare time. He also enjoys bowling, music, and travel. Since moving to New Jersey in 1999, Andrew appreciates summers by the shore, listening to live music and drinking a pint. He is British, after all.
SOCIETY FOR APPLIED SPECTROSCOPY
DISTINGUISHED SERVICE AWARDS

Recognizing members for their long-time service to the Society.

Presentation: 7:00 pm Tuesday, Imperial A

Ian R. Lewis
Kaiser Optical Systems

Ian R. Lewis obtained his degree in Chemistry and Chemical Technology at the University of Bradford (UK) in 1989, his Ph.D. in 1992 under Professors Anthony Johnson and Howell Edwards, and was appointed an Honorary Visiting Researcher in 1992. He postdoced with Professor Peter Griffiths while also consulting on Raman spectroscopy to industry. In 1996 he joined Kaiser Optical Systems and is currently Director of Marketing & Product Management.

He currently serves on Boards of several scientific organizations, three Editorial Boards, chairs the ASTM committee on Raman, and is the 2019 Program Chair for the ICAVS meeting in Auckland, New Zealand.

Ian received the 2008 Charles Mann award in Analytical Raman spectroscopy from FACSS, was made a Fellow of the Royal Society of Chemistry in 2017, and he will receive the Coblentz Society award of Honorary Membership at the SciX conference in 2018.

With SAS, he started as student member in 1992, was President-Elect in 2013, President in 2014, & past-President (2015) and is the current SAS Secretary. Other roles at SAS include president of the Detroit SAS section, chair of several SAS committees, Executive committee member, delegate to the Governing Board, liaison between FACSS & SAS, Applied Spectroscopy Editorial Advisory Board member, and a tour speaker. He was made a Fellow of SAS in 2011.

He has sought to strengthen the spectroscopy community and during his term on the SAS Executive Committee (2013-2015) Ian spearheaded several new initiatives. Some accomplishments included, a complete review of all Society operations in search of ways to improve and streamline; working with our Treasurer to better invest Society funds; working to enhance SAS marketing efforts via new booth design, presence at other scientific meetings, approving a Spectroscopy Marketplace, and a new newsletter design; strengthening the benefits of our corporate sponsor program; initiating a member survey to gain insight into our members’ needs; restructuring membership dues; revised the Society’s By-Laws, and implemented a strategic fund to help ensure the future of SAS. In addition, during his tenure and in conjunction with other dedicated individuals, a Marketing allocation was budgeted to help publicize the Society, Sage was selected as the new publisher of Applied Spectroscopy, the Society’s office was moved, and the EC approved a transition to a new member database.

Ian has also contributed to both the Coblentz Society and FACSS and served in several leadership capacities.

He lives in Michigan with his wife Dr. Mary L. Lewis and their children.

Diane Parry
Procter & Gamble Company

Diane Parry is currently SAS Treasurer and is a recent retiree from the Procter & Gamble Company. For over 20 years, Diane has volunteered with SAS, FACSS/SciX and science in a range of capacities, including as:

- The 2015 SAS President. Diane enabled continued delivery of member benefits and improved SAS financial stability by championing 1) the move of the SAS Office out of seldom-visited rental space, 2) the website transition to the modern infrastructure, and 3) planning the 2016 simplification in Applied Spectroscopy management under Sage.
- As a 3-term SAS Parliamentarian from 2009-2011.
- As the developer of the role of meterian for FACSS, serving in this role and the FACSS LRP from 2004-2014.
- As the 2006 FACSS Governing Board Chair.
- As a workshop co-presenter or presenter to undergraduate and graduate students, "Professional Analytical Chemists in Industry" from 1995 to 2014.

Diane obtained her Ph.D. in Physical and Analytical Chemistry from the University of Utah in 1989, under the guidance of Professor Joel Harris. She completed Post-Doctoral work at IBM’s Almaden Research Center, San Jose, before joining P&G in 1991.
Recognizing those individuals who have made exceptional contributions to spectroscopy.

John Chalmers

Presentation: 7:00 pm Tuesday, Imperial A

John Chalmers pursued a career in industrial research-based vibrational spectroscopy focusing mainly on polymer-related products. He worked in the UK for 34 years employed by ICI plc. He early retired at the end of 1999, then becoming a self-employed consultant while also holding part-time positions within the Chemistry Department of the University of Nottingham from 2000 to 2010.

John served for several years as a Governing Board Member and International Delegate for SAS before becoming President of SAS in 2008. Subsequently, John was instrumental in forming the SAS UK Regional Section.

John has served on various other spectroscopy-based committees, including the UK Infrared and Raman Discussion Group (the IRDG) for which he served as Chair for a period of 9 years. He also served for several years as the RSC representative to FACSS/SciX.

He has edited or co-edited a number of books, including, together with Peter Griffiths, the 5-volume *Handbook of Vibrational Spectroscopy*. He was also the Article Editor for *Spectroscopy Europe* for several years.

Today, while still dabbling in “things” associated with vibrational spectroscopy, much of his energy is directed towards other pastimes such as gardening and walking the UK countryside.

Javier Laserna

Oral Presentation: 8:30 am Thursday, Imperial A

Javier Laserna current research interests include laser-induced breakdown spectroscopy (LIBS); time-of-flight mass spectrometry; surface analysis using laser ablation with optical and ion detection; laser remote chemical analysis; on-line and fieldable analytical instrumentation. Application areas comprise analysis of energetic materials; development of sensors for CBNRE threats; lasers for cultural heritage; and LIBS and Raman spectroscopy for space exploration.

Javier Laserna is associate editor of Applied Spectroscopy, and member of the advisory board of Spectrochimica Acta, Part B – Atomic Spectroscopy, Reviews in Analytical Chemistry, and the Open Journal of Analytical Chemistry. Professor Laserna was awarded with the RSEQ National Award for Research in Analytical Chemistry in 2009 and the SEA National Award for Research in Applied Spectroscopy in 2010. He is co-inventor of 6 patents held by the University of Malaga and has published nearly 300 papers plus 5 books and book chapters.
Felix Lussier
University of Montreal

Felix Lussier is currently finishing a Ph.D. in Analytical chemistry at the University of Montreal under the supervision of Jean-Francois Masson. His thesis focused on the development of novel optical nanosensors for medical and neurosciences applications. His achievements were recognized notably with the Silver academic medal of the General Governor of Canada, and the Ryan-Harris award of the Analytical chemistry division of the Chemical Institute of Canada. Felix Lussier was also the chair of the 2018 Gordon Research Seminar (GRS) on bioanalytical sensors held in Salve Regina University in Rhode Island, USA.

Marcie Wiggins
University of Delaware

Marcie Wiggins earned a B.S. in chemistry and art history with honors in 2010 from the University of Maryland, College Park. She is currently a PhD candidate in analytical chemistry at the University of Delaware under Dr. Karl S. Booksh and Dr. Jocelyn Alcántara-Garcia. Most of her scientific career has contributed to the field of cultural heritage science. She has worked at the Library of Congress, the Smithsonian Institution, the Rijksmuseum, and Winterthur Museum, Garden & Library, as well as collaborating with the Palace Museum (Beijing, China), Colonial Williamsburg (Virginia, USA), and CBC Conservazione Beni Culturali (Rome, Italy). Ms. Wiggins’s current work explores the usage and manufacturing of copper-based pigments and their subsequent degradation and interactions with organic substrates through the application of novel spectroscopy and analysis methods. Using Raman spectroscopy and Multivariate Curve Resolution (MCR), she has identified copper chloride trihydroxide polymorphs in Chinese architectural paints for insight into transitions of artists’ material. She has used Raman, FTIR, and X-ray photoelectron spectroscopy to monitor and document copper acetate pigment degradation and organic interactions.

She has published three peer-reviewed articles and has made nine presentations at domestic and international conferences. Her university awards for research and teaching include the Elizabeth Dyer Award and the UD Dissertation Fellowship, Phi Beta Kappa and Phi Lambda Upsilon. This year she is one of the four recipients of the Eastern Analytical Symposium Graduate Student Award.
Andrew T. Weakley graduated in 2014 with a PhD in Chemical Engineering from the University of Idaho. As a graduate student, Dr. Weakley developed several model-free baseline correction algorithms applicable to vibrational spectra containing uni- and bidirectional bands, quantified the hard and soft segment fraction of mixed thermoplastic polyurethanes using partial least squares (PLS) with Raman spectroscopy, and developed a variable selection algorithm known as backward Monte Carlo Unimportant Variable Elimination (BMCUVE). Presently, Dr. Weakley is post-doctoral fellow at the Air Quality Research Center (AQRC) at the University of California, Davis continuing to advance chemometric techniques in the atmospheric sciences by developing and implementing source-sensitive multilevel PLS methodologies to quantifying organic and elemental (“soot”) carbon in ambient particulate matter. Dr. Weakley also collaborates as an independent contractor (Weakley Consulting), most notably supporting occupational health studies that aid in the cost-effective implementation of portable infrared spectrometers to determine filter-bound respirable silica in US coal and non-coal mines. Other research and interest areas include the near-infrared analysis of agriculture samples, mid-infrared forensic analysis, PLS latent variable interpretation, and chemometric education.

Society for Applied Spectroscopy
William J. Poehlman Award

Recognizing an outstanding SAS Regional Section that has met the goals and ideals of the Society over the past year.

Presentation: 7:00 pm Tuesday, Imperial A

SAS Cleveland Regional Section

The SAS Cleveland Section is being recognized as this year’s outstanding section for maintaining a consistently high level of activity throughout the year and completing a large number of projects which furthered the mission and goals of SAS.

Inaugural SAS / NASLIBS Award
For the Best Paper Published in Applied Spectroscopy in 2017
On Laser Induced Breakdown Spectroscopy


Presentation: 7:00 pm Tuesday, Imperial A

S. Michael Angel
University of South Carolina
Patrick D. Barnett
Sandia National Laboratories
Nirmal Lamsal
ChemImage Corporation

Please see biographical information on next page.

Next year: October 13 - 18, 2019, Palm Springs, CA
S. Michael Angel is a Professor of Chemistry at the University of South Carolina where he has held the Fred M. Weissman Palmetto Chair in Chemical Ecology since 2005 and named a Carolina Trustee Professor in 2013. He received his PhD from North Carolina State University in 1985 and carried out Postdoctoral work with Tomas Hirschfeld at Lawrence Livermore National Laboratory. Angel’s research group works mainly in the areas of remote and in-situ laser spectroscopy with a focus on deep-ocean, planetary, and homeland security applications of Raman and LIBS. Recent work includes developing the spatial heterodyne Raman spectrometer (SHRS) which was awarded the 2012 Meggers Award, and exploring the SHRS for deep UV Raman, remote Raman and for use on future planetary landers and SmallSats.

Angel is a member of the Mars 2020 SuperCam science team (2014) and is an elected Fellow of AAAS and a SAS Fellow. He has been a SAS Tour speaker, an A-Page Advisory Panel member for Analytical Chemistry and editorial advisory board member of Talanta and the International Journal of Spectroscopy, and a member of the scientific committee of NASLIBS and the International LIBS conference. Other honors include the 2015 Southern Chemist Award, 2012 Applied Spectroscopy William F. Meggers Award, 2012 ACS South Carolina Chemist of the Year Award, 2011 Federation of Analytical Chemistry & Spectroscopy Societies (FACSS) Innovation Technology Award, and 2006 Lawrence Livermore National Laboratory Physics and Advanced Technologies Directorate Award.

Nirmal Lamsal received a Master's degree in physical chemistry in 2008 from Tribhuvan University, Nepal. After spending two years teaching chemistry at a private college in Kathamndu, Nepal, Nirmal joined the University of South Carolina in 2010. He obtained PhD in analytical chemistry in 2015 under the supervision of Dr. S. Michael Angel. His PhD research focuses on designing and constructing a novel deep-UV FT Raman spectrometer, known as the Spatial Heterodyne Raman Spectrometer (SHRS) for standoff measurements. During his time at USC, Nirmal has written three papers and has presented his results at several meetings and conferences, including SCIX, Pittcon and the Lunar and Planetary Science Conference. After graduation, Nirmal moved to Austin, TX to join the IMACC-LLC as a senior scientist. In his time at IMACC, he worked extensively in the field of optical analytical instruments and designed a new type of FTIR-Raman system for fast fuel gas analysis in stacks and process applications. Recently, Nirmal accepted the Currently, he works at ChemImage Corporation in Pittsburgh, PA with focus on development of instruments for chemical imaging using Raman spectroscopy.

Kelly C. Paul earned her B.S. degree in chemistry (ACS certified) from the University of South Carolina in 2015. She completed an extended undergraduate research project with Dr. Stanley Michael Angel, focusing primarily on Raman spectroscopy. In 2016 she joined the Shakespeare Company LLC, a division of Newell Brands, where she is currently employed in the Polymer Analytical Lab.

K. Alicia Strange Fessler (Dr. Strange) received a BS degree from East Carolina University in 2008, a MSc from the University of Manchester in 2010, and PhD from the University of South Carolina in 2016. PhD research conducted under Dr. S. Michael Angel characterized and demonstrated standoff and 1-D imaging using a visible spatial heterodyne Raman spectrometer (SHRS) for the detection of solids and solutions related to planetary exploration and high explosives applications. Her research also demonstrated and quantified the larger field-of-view and throughput of the SHRS for transmission Raman spectroscopy measurements in comparison to an f/1.8 dispersive system. After completing her doctoral degree, she took a postdoctoral position at Savannah River National Laboratory (SRNL) in the Global Security group, and she was hired as a Senior Scientist into the Analytical Development division at SRNL in 2017. Her research at SRNL applies optical spectroscopic methods and techniques to applications concerning nuclear nonproliferation, safeguards, and process analysis.
SOCIETY FOR APPLIED SPECTROSCOPY
SAS FELLOWS AWARDS

Recognizes individual members for their outstanding service to the field of spectroscopy and the Society for Applied Spectroscopy.

Presentations: 7:00 pm Tuesday, Imperial A

Linda Baine McGown is the William Weightman Walker Professor of the Department of Chemistry and Chemical Biology at Rensselaer Polytechnic Institute. She received her B.S. from the State University of New York at BufTalo in 1975 and her Ph.D. from the University of Washington in 1979. She was a faculty member at California State University Long Beach, Oklahoma State University and Duke University before joining RPI in 2004. She is a Fellow of the American Association for the Advancement of Science since 2001, and recipient of the 2018 Eastern Analytical Symposium Award for Outstanding Achievements in the Field of Analytical Chemistry and the 1994 New York Section of the Society for Applied Spectroscopy Gold Medal Award. She was included in the 2016 Power List: The Top 50 Most Influential Women in the Analytical Sciences, and in featured in The Future of Women in Chemistry and Science in honor of UNESCO declaring 2011 the International Year of Chemistry. She has served on numerous editorial boards including Chemical and Engineering News, Analytical Chemistry, Applied Spectroscopy, Analytica Chimica Acta and Life.

A common thread through Dr. McGown’s research is the recognition of the analytical potential of new discoveries and emerging technologies, beginning in her early career with frequency-domain fluorescence lifetime techniques. She enjoys pursuing unconventional pathways to overcoming existing challenges, such as her genome inspired approach to aptamer discovery. Other current research interests include molecular self-assembly (particularly G-quadruplex DNA), bioseparations, and prebiotic chemistry on early Earth.

Michael (Micky) Myrick received his Ph.D. from New Mexico State University in 1988 and was a postdoctoral associate of S. Michael Angel at Lawrence Livermore National Laboratory from 1989-90. He was a staff member at LLNL from 1990-91 and has been a member of the Department of Chemistry and Biochemistry at the University of South Carolina from 1991-present. He is the author of 170+ publications and 33+ patents.

His work in multivariate optical computing lead via a startup to the ICE sensor system commercialized by Halliburton Energy Services for petroleum exploration and carbon sequestration, in use worldwide. His work has featured on the covers of Analytical Chemistry, Applied Spectroscopy, Laser Focus World and the Reservoir Innovations Technical Journal. His work in infrared chemical imaging and adsorption thermography was publicized on CNN, Fox, NPR Science Friday, SC Radio Network, Popular Science, and elsewhere. He received the Outstanding SC Chemist Award from the SC Section of the ACS in 2018.

As an educator, Micky teaches general chemistry, both physical chemistry laboratory courses, and a graduate course in molecular spectroscopy. He has published 5 papers on new spectroscopy experiments for physical chemistry laboratories in the Journal of Chemical Education, and has received several teaching awards at USC, including the Michael J. Mungo undergraduate teaching award and the SC Honors College Outstanding Professor of Science award.

David W. Schiering is a founder and principal of Czitek, a small company dedicated to the development and marketing of vibrational spectroscopy products. He has more than thirty (30) years of experience in the business of instrumentation for chemical measurements. Prior to Czitek, Dr. Schiering has held numerous roles in management, science and technology, product development, and product management at Smiths Detection, SensIR Technologies, Thermo Electron Corp., and Perkin Elmer. In his career Dr. Schiering has either been a key contributor or leader in the development of ground-breaking vibrational spectroscopy technologies in the fields of infrared microspectroscopy, portable and handheld FT-IR and Raman instruments and methods, vibrational spectroscopy applications in security and defense, Raman spectroscopy for threat detection in airport screening.

Dr. Schiering, who has authored more than 25 publications on various aspects of vibrational spectroscopy, holds a PhD in analytical chemistry from Miami University, where he is also an adjunct Assistant Professor of Chemistry. Dr. Schiering has served the Coblentz Society as a member of the Board of Managers from 1993 to 1997 and as secretary from 1991 to 2010. In 2011, Dr. Schiering was made an Honorary Member of the Coblentz Society and in 1983 received the Coblentz Society Student Award. Dr. Schiering has been a member of the Society for Applied Spectroscopy since 1981. He is a member of the Coblentz technical section and the New Jersey – New York affiliates.
COBLENTZ SOCIETY HONORARY MEMBERSHIP AWARD

Based on the work of Ian Lewis for the Coblentz Society, his expertise and contributions to the field of Raman spectroscopy, his work with the Society’s affiliate the Society for Applied Spectroscopy (SAS), with FACSS, and with the Society’s National Meeting, SciX presented by FACSS, Dr. Ian Lewis was selected for the award of Honorary Member.

Ian R. Lewis
Kaiser Optical Systems

Presentation: 7:00 pm Tuesday, Imperial A

Ian R. Lewis obtained his degree in Chemistry and Chemical Technology in 1989 and his Ph.D. in 1992.

He was elected to the Board of Managers of the Coblentz Society in 2004 and served from 2004 through 2008. From March 2009 to March 2011 he served as the President of the Society. During his time on the Board and as President, he worked to improve relationships between the Coblentz Society and other organizations, solidified and expanded the Coblentz Society’s involvement in conferences to meet the Coblentz Society’s mission of “promoting the understanding and application of vibration spectroscopy,” helped form both the Craver and Fateley Awards, authorized the development of (and participated in editing) a new Coblentz Society website, conducted a review of finances, managed development of funding sources in order to produce a balanced budget, promoted the process of using social media and partnerships to publicize the Society’s activities and awards, wrote the Coblentz Society’s first President’s Guide (what to do, when to do it, and how to do it – to facilitate transition between Presidents, officers, and committees), and restarted the Coblentz Society’s “Honorary Membership” award program. He currently serves the Society as its Treasurer.

Speed Mentoring Event
12:00 – 1:15 p.m., Room A602
Monday, October 22

Lunch provided!

The Coblentz Society invites you to join us for a fun, fast-paced, one-on-one setting to meet other scientists, expand your professional network, and potentially form a mentoring relationship. Pre-registration, while requested, is not required. Just show up and join the fun!
The Craver Award honoring Clara Craver is presented annually to an outstanding young molecular spectroscopist whose efforts are in the area of applied analytical vibrational spectroscopy. Clara Craver was the editor of the Coblentz Desk reference and other subsequent libraries that later became databases of infrared spectra that is the foundation for the application of modern vibrational spectroscopy. Her efforts resulted in the creation of the endowment that supports the Coblentz Society and many of the awards that it gives out annually. The candidate must be under the age of 45 on January 1st of the year of the award. The work may include any aspect of infrared (NIR, MIR, or Far), and/or THz, and/or Raman spectroscopy in applied analytical vibrational spectroscopy. The nominees may come from an academia, government lab, or industrial backgrounds.

Christy Haynes
University of Minnesota

The 2018 Craver Award goes to Prof. Christy Haynes, University of Minnesota. Her efforts fall broadly into three areas: the development of the use of new tools to assess chronic/acute exposure of nanoscale and molecular toxicants at the cellular level, development of sensing systems for use in complex matrices, and application of bioanalytical tools in biomedical systems. She has made great strides in developing new colloidal SERS probes and sensing protein targets in complex matrices. Working in a target-specific manner, she has utilized antibodies, aptamers, and even glycopolymers, depending on the target of the analysis. These efforts have benefited enormously from the development of new plasmonic nanoarchitectures that are specially designed for stability and subsequent Raman enhancement. She has manipulated metal-dielectric structures with respect to material composition, geometry, assembly, and placement to construct a set of SERS-enhancing structures with remarkable versatility and applicability across a wide spectrum of biological and environmental applications.

The William G. Fateley Student Award is given by the Coblentz Society annually to recognize outstanding contributions to vibrational spectroscopy during a current Ph.D. program. William G. (Bill) Fateley was among the first winners (1965) of the Coblentz award, and worked tirelessly to promote the Pittsburgh Conference and FACSS. Author of more than 350 publications and recipient of numerous other awards, he returned to his alma mater, Kansas State University, as chairman of his department in 1972 and served there until his retirement 1997 and beyond. He served as the Editor of Applied Spectroscopy for 20 years, and served as mentor to a generation of spectroscopists.

Courtney Marie Olson
University of Minnesota

Courtney Olson began her research career in analytical and physical chemistry with Dr. Karn at Ohio Northern University (ONU). During the summer of 2013, she was accepted to participate in Research Experience for Undergraduates at the University of Oregon with Dr. Geraldine Richmond. She studied how polyelectrolytes behave at an oil-water interface with addition of metal salts and changes in acidity using vibrational sum frequency generation spectroscopy and interfacial tension measurements. In 2014, Courtney received her B.S. in chemistry from ONU. During the summer before starting graduate school at the University of Minnesota, Courtney started her graduate research with Dr. Aaron Massari, where she was trained in two-dimensional infrared (2D-IR) spectroscopy. Courtney earned her M.S. in December 2015, while also becoming a Ph.D. candidate. During her first few years of thesis work in Dr. Massari’s group, she studied the silicon hydride mode in small molecule silanes using 2D-IR spectroscopy to see if different substituents imparted different sensitivity to solvatochromism and/or spectral diffusion. She then continued to use the silicon hydride mode as a probe in a new system, polydimethylsiloxane, in hopes of seeing differences in the ultrafast structural dynamics of the polymer by inducing physical and chemical changes like swelling, compression, cross-link density, etc. She has published seven peer-reviewed papers, being first author on two of them, and has presented her research at many poster sessions at scientific conferences. She has earned several awards and fellowships, including a National Science Foundation Graduate Research Fellowship (NSF-GRFP) and the Overend Award for Graduate Research in Physical Chemistry.

Other than performing research, Courtney also volunteers and participates in outreach. She volunteers for the Energy and U show as a fire safety volunteer, where the show helps 3rd through 6th grade students get excited about science and engineering. Since the summer of 2015, Courtney has participated in the yearly outreach program, University on the Prairie, where she is one of the science outreach instructors. This program immerses middle and high school students from rural portions of Minnesota in hands-on activities to show them what they can do with a science education.
For many years, the Coblentz Society has encouraged young scientists to pursue studies on spectroscopy by seeking nominations of outstanding students for the Coblentz Student Awards. The awardees receive a copy of the Society’s Deskbook, a certificate, and a year’s membership in the Society. Their names, the names of their faculty advisors, their institute, and their anticipated graduation date appear in the Society’s Fall Newsletter.

Presentation: Sunday Welcome Mixer

Kajari Bera
University of Minnesota

Kajari Bera is currently a third-year graduate student working in Dr. Renee Frontiera’s group at the University of Minnesota. She received her master’s degree in Chemistry from IISER Bhopal, India and the University of Minnesota, USA. Her current research includes understanding the fundamentals of charge transfer processes using the ultrafast vibrational spectroscopic technique called femtosecond stimulated Raman spectroscopy (FSRS). More specifically, Kajari is interested in probing the ultrafast dynamics during solar energy conversion in organic semiconductors that possess the ability to improve the efficiency of photovoltaic cells. Ultrafast FSRS provides a unique vibrational technique to study the time-dependent evolution of a system in its excited state by monitoring the molecule’s Raman modes on a very fast timescale. She has one first-author publication in The Journal of Physical Chemistry Letters which demonstrates the use of this ultrafast Raman microscopic technique to reveal the rapid structural dynamics that occur in organic semiconductors. She initiated a collaboration with an organic synthetic group at the University in order to apply this ultrafast vibrational spectroscopic technique to a wide-variety of systems.

During her graduate studies at the University of Minnesota, Kajari excelled in her course work securing an overall GPA of 4.0 in 2016, along with scoring the highest grade possible in her analytical spectroscopy course. She enjoys teaching and has received the best teaching assistant award out of 40 potential candidates, for teaching general chemistry to undergraduate students at the University of Minnesota in 2017. She also served as a teaching assistant for a graduate level Laser Spectroscopy course, where she prepared and graded the solutions to quizzes and homework assignments. She is actively associated with various student groups at the department as well as at the University level.

Santosh Paidi
Johns Hopkins University

Santosh Paidi is a doctoral student in the Department of Mechanical Engineering at Johns Hopkins University. His current research efforts in Dr. Ishan Barman’s lab are directed towards application of Raman spectroscopy and multivariate data analysis to develop novel quantitative approaches for addressing unmet needs in the molecular study of cancers. His recent work in this area has resulted in the creation of a new landscape for spectroscopic monitoring of stromal adaptations in the lungs of animals bearing breast tumor xenografts, prior to the arrival of metastatic cancer cells. He demonstrated this by exploiting the unique Raman markers stemming from the stromal modifications (induced by factors secreted from the primary tumor) to develop a decision algorithm for accurate differentiation of pre-metastatic lungs in mice bearing high metastatic tumor xenografts from those in mice with low metastatic tumor xenografts and normal controls. In addition to applications in cancer, a major focus of Santosh’s graduate study is the development of a detection framework based on label-free plasmon-enhanced Raman spectroscopy for rapid identification of closely related human and marine antibody drugs during their manufacturing, with the ultimate goal of translation to fill-finish sites. Prior to commencing doctoral study at Johns Hopkins, Santosh graduated from the Indian Institute of Technology Bombay in 2014 with a B.Tech in Mechanical Engineering and a minor in Aerospace Engineering. As an undergraduate, his research was directed towards understanding the effects of inert gas dilution on the characteristics of hydrogen combustion. Overall, his research efforts have resulted in ten peer-reviewed publications in journals such as Cancer Research, Analytical Chemistry and Scientific Reports. He has received several awards including an SLAS Graduate Education Fellowship Grant, the Tomas A. Hirschfeld Scholar Award, the Tony B. Academic Travel Award, an SPIE Optics and Photonics Education Scholarship, and an Undergraduate Research Award by IIT Bombay in recognition of his work.
Megan Thielges
Indiana University

Oral Presentation: 8:00 am Wednesday, Imperial A

Megan Thielges received her B.S. (summa cum laude) in biochemistry at Arizona State University (Tempe, AZ) in 2003. She earned a Ph.D. in biophysics in 2009 from The Scripps Research Institute (La Jolla, CA) under the direction of Professor Floyd E. Romesberg and then pursued postdoctoral training in multidimensional IR spectroscopy with Professor Michael D. Fayer at Stanford University. She joined the faculty at Indiana University as an assistant professor in 2012. Her research program focuses on developing linear and multidimensional infrared spectroscopy in combination with methods of biochemistry and chemical biology for placing vibrational probe groups at specific sites to map out the conformations and dynamics throughout proteins with atomic spatial resolution and picosecond temporal resolution. Her group is applying the approach to elucidate the functional role of protein conformations and dynamics in fundamental cellular processes, including metabolism, signaling, and photosynthesis.

ANACHEM AWARD

The ANACHEM Award is presented annually to an outstanding analytical chemist based on activities in teaching, research, administration or other activity, which has advanced the art and science of the field.

Susan Lunte
University of Kansas

Oral Presentation: 8:00 am Thursday, Imperial A

Susan M. Lunte is the Ralph N. Adams Distinguished Professor of Chemistry and Pharmaceutical Chemistry, Director of the Adams Institute for Bioanalytical Chemistry, and Director of the NIH COBRE Center for Molecular Analysis of Disease Pathways at the University of Kansas, Lawrence, KS. She received a B.S. degree in chemistry from Kalamazoo College and a Ph.D. in Analytical Chemistry in 1984 from Purdue University working with Peter Kissinger. Dr. Lunte was the Editor-in-Chief of Analytical Methods from 2012-2017. She is a Fellow of the AAPS, ACS, RSC and AAAS. Dr. Lunte’s research interests include new methodologies for separation and detection of peptides, amino acids, neurotransmitters and pharmaceuticals in biological fluids.

ROYAL SOCIETY OF CHEMISTRY
ANALYST EMERGING INVESTIGATOR LECTURESHP

This lectureship was launched as a platform for an early career analytical scientist to raise the profile of the analytical sciences to the wider scientific community and the general public.

Wei Min
Columbia University

Presentation: 8:30 am Monday, Imperial A

Dr. Wei Min graduated from Peking University, China, with a Bachelor's degree in 2003. He received his Ph.D. in Chemistry from Harvard University in 2008 studying single-molecule biophysics with Prof. Sunney Xie. After continuing his postdoctoral work in Xie group, Dr. Min joined the faculty of Department of Chemistry at Columbia University in 2010 and has been a tenured full Professor since 2017. Dr. Min's current research interests focus on developing novel optical spectroscopy and microscopy technology to address biomedical problems.
The Chalmers and Dent Student Travel Award was established to recognize and support an outstanding PhD student through financial support to present their research to an international audience at the annual SciX meeting. The award is named after two previous chairs of the IRDG, John Chalmers and Geoff Dent, in recognition of their continuing support for the IRDG and in particular for their support of students and early career researchers. John and Geoff have been active in the development and promotion of the vibrational spectroscopists of the future in both academia and industry through mentoring and inspiration.

Anastasia Kapara
University of Strathclyde / University of Edinburgh
Presentation: Sunday Welcome Mixer

Anastasia obtained her B.Sc. Hons. degree in Molecular Biology and Genetics at Democritus University of Thrace, in 2012. She acquired her M.Sc. (Dist.) in Pharmaceutical Sciences at Edinburgh Napier University in 2014. She embarked on an industrial career in Piramal Healthcare Pharma Solutions, as a Senior Protein Scientist. Anastasia has also worked under the Greek National Strategic Reference Framework (NSRF) as a Laboratory Assistant. In 2015, she joined OPTIMA Centre for Doctoral Training (CDT) to begin her joint Ph.D at the Centre for Molecular Nanometrology (University of Strathclyde) and Cancer Research Centre (University of Edinburgh) for an integrated master’s in Healthcare Innovation and Entrepreneurship within the Business School of the University of Edinburgh. Her project involves Raman spectroscopy to image and distinguish breast cancer using responsive reporters. Under the direction of Prof Karen Faulds, Prof Val Brunton and Prof Duncan Graham, Anastasia has created a platform for targeting, detecting and tracking valid biomarkers in cancer cells simultaneously, using functionalized gold nanoparticles. The novel probes show low cellular toxicity and good biocompatibility in vitro, in 3D using fixed and live cells. Additionally, the Raman cell mapping revealed that there is a strong targeting effect of the probes into different cell lines based on their functionalization properties. Parallel experiments showed that there is lower probe accumulation, in cells treated with anticancer drugs that induce the target’s degradation. These data indicate that the novel probes could be utilized to distinguish cancer cells for direct molecular imaging and quantification biomarkers in living breast cancer cells, and inform about the efficiency of drug candidates, with the advantages of high sensitivity and biocompatibility. Anastasia presented her research at the Spring SciX Conference under the Infrared Raman Discussion Group, the Imperial Biomedical Imaging Summer School, and the RSC Biorthogonal Symposium. This year she has been awarded the SULSA Postdoctoral and Early Career Research Exchange (PECRE) grant, the Analytical Chemistry Trust Fund grant and the Go Abroad Fund grant awarded by the University of Edinburgh. Anastasia is associate member of the Royal Society of Chemistry (AMRSC), member of the Society for Applied Spectroscopy (SAS), International Society for Clinical Spectroscopy (CLIRSPEC), the Infrared and Raman Discussion Group (IRDG).

Claire V. Crowder
Arizona State University
Presentation: Sunday Welcome Mixer

Claire V. Crowther is a graduate student in her final year at Arizona State University where she works with Dr. Mark A. Hayes. Her research focuses on using electrokinetic forces to probe and separate a variety of biological samples in microfluidic devices. Her projects include the development and implementation of a high-resolution separations device, rapid identification of three of the pathogenic serovars of *Listeria monocytogenes*, separation of protists present in the hindgut of termites, and probing the effect of various surface treatments on *E. coli*. Her work has resulted publications (Analyst, 142(9), 1608-1618, 2017), a submitted patent application, and seven oral and poster presentations at national and international conferences. She currently works as a Research Engineer for Charlot Biosciences helping to commercialize microfluidic devices. Claire hopes that her work will one day enable rapid and cost-effective tests capable of identifying pathogens of interest, for both quality control and medical diagnoses, and enable the selective concentration of specific analytes from a mixture. Claire received her B.S. in Chemistry from Allegheny College in Meadville, PA. During her graduate career she mentored six undergraduate students and served as a student representative in the graduate student government at ASU. For the past year she served as President for graduate student government. Claire has been recognized with an award for excellence in teaching from the School of Molecular Sciences at ASU, the AES Electrophoresis Society Poster Award at SciX in 2015, and special recognition from the student government on behalf of her work with the graduate student association.
AES LIFETIME ACHIEVEMENT AWARD

Norm Dovichi
University of Notre Dame

Oral Presentation: 1:30 pm Monday, Room L401

Norm Dovichi obtained his B.Sc. degree in chemistry and mathematics from Northern Illinois University in 1976. Four years later, he received his Ph.D. in physical/analytical chemistry from the University of Utah for the thesis titled “Thermal Lens Calorimetry” under the direction of Joel Harris. He spent two years as a postdoctoral fellow at Los Alamos Scientific Laboratory with Dick Keller, working in what would become the National Flow Cytometry Resource. Norm started his academic career at the University of Wyoming in 1982. In 1986, his group move to the University of Alberta, in 2000 to the University of Washington, and in 2010 to the University of Notre Dame, where Norm is the Grace-Rupley Professor of Chemistry and Biochemistry.

Professor Dovichi’s research interests include ultra-sensitive chemical analysis and bioanalytical chemistry. This work has been recognized with a number of awards and honors. Several of note include the Ralph N. Adams Award (2007), the Spectrochemical Analysis Award (2003) and the Chemical Instrumentation Award (1996) from the Analytical Division of the American Chemical Society; an honorary professorship from the Chinese Academy of Sciences - Dalian Institute of Chemical Physics (2002); the H.E. Merck Award for Analytical Chemistry (2000); the J. Gordin Kaplan Award for Excellence in Research - University of Alberta (1997); the Fisher (1998), Noranda (1992), and McBryde (1991) awards from the Canadian Society for Chemistry; and The Steacie Prize from the E.W.R. Steacie Memorial Fund (1991). He was the only chemist named as an Unsung Hero of the human genome project by Science in their 2001 February 16 issue.

AES MID-CAREER AWARD

Recognizes exceptional contributions to the field of electrophoresis, microfluidics, and related areas by an individual who is currently in the middle of their career.

Michael Roper
Florida State University

Oral Presentation: 8:30 am Wednesday, Imperial A

Michael Roper received his B.S. in chemistry from the University of Texas at Austin in 1998. He then received his Ph.D. from the University of Florida in 2003 under the supervision of Robert T. Kennedy. From 2003 – 2006, he was a postdoctoral fellow at the University of Virginia in James Landers’ laboratory. He joined Florida State University in 2006 and is now a professor in the Department of Chemistry and Biochemistry and a member of the Molecular Biophysics program. During this time, he has mentored approximately 20 graduate students and 30 undergraduate students.

He also serves as an Associate Editor for Analytical Methods and is on the Features Panel of Analytical Chemistry. In 2014, he was awarded the ACS Division of Analytical Chemistry Award for Young Investigator in Separation Science. His current research interests include the development of microfluidic systems for automating sample preparation strategies, development of electrophoretic separation methods for measuring biologically important peptides and investigating dynamics of cellular systems.
<table>
<thead>
<tr>
<th>Year</th>
<th>Location</th>
<th>Governing Board Chair</th>
<th>General</th>
<th>Program</th>
<th>Arrangements</th>
<th>Exhibit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1973</td>
<td></td>
<td>Jeannette Grasselli</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1974 - Atlantic City</td>
<td>James White</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td>Exhibit</td>
<td></td>
</tr>
<tr>
<td>1975 - Indianapolis</td>
<td>James Holcombe</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td>Exhibit</td>
<td></td>
</tr>
<tr>
<td>1976 - Philadelphia</td>
<td>Edward Brame</td>
<td>Governing Board Chair and General</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1977 - Detroit</td>
<td>Edgar Peck</td>
<td>Governing Board Chair</td>
<td>General</td>
<td></td>
<td>Exhibit</td>
<td></td>
</tr>
<tr>
<td>1978 - Boston</td>
<td>James Williamson</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td>Exhibit</td>
<td></td>
</tr>
<tr>
<td>1979 - Philadelphia</td>
<td>Peter Keliher</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td>Exhibit</td>
<td></td>
</tr>
<tr>
<td>1980 - Philadelphia</td>
<td>L. Felix Schneider</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1981 - Philadelphia</td>
<td>Jack Katon</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td>Exhibit</td>
<td></td>
</tr>
<tr>
<td>1982 - Philadelphia</td>
<td>Sydney Fleming</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1983 - Philadelphia</td>
<td>Mary Kaiser</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1984 - Philadelphia</td>
<td>Theodore Rains</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1985 - Philadelphia</td>
<td>Robert Barford</td>
<td>Governing Board Chair</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1986 - St. Louis</td>
<td>Ronald Schroeder</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1987 - Detroit</td>
<td>Patricia Rouse Coleman</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1988 - Boston</td>
<td>James Cavanaugh</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1989 - Chicago</td>
<td>Alexander Scheeline</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990 - Cleveland</td>
<td>Nancy Miller-Ihli</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1991 - Anaheim</td>
<td>David Coleman</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1992 - Philadelphia</td>
<td>Karmie Galle</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1993 - Detroit</td>
<td>Robert Watters</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1994 - St. Louis</td>
<td>Paul Bourassa</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995 - Cincinnati</td>
<td>Jon W. Carnahan</td>
<td>Governing Board Chair</td>
<td>General</td>
<td>Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>Location</td>
<td>Board Chair</td>
<td>General Co-Chairs</td>
<td>Program Co-Chairs</td>
<td>Exhibit Co-Chairs</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>-------------------</td>
<td>------------------------------------</td>
<td>----------------------------</td>
<td>-----------------------------</td>
<td>-------------------------------</td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>Kansas City</td>
<td>Rachael Barbour</td>
<td>O. Karmie Galle</td>
<td>William Fateley</td>
<td>Scott McGeorge</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Governing Board Chair)</td>
<td>(General)</td>
<td>(Program)</td>
<td>(Exhibit)</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>Providence</td>
<td>Mildred Barber</td>
<td>Chris Brown</td>
<td>John Olesik</td>
<td>Scott McGeorge</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Governing Board Chair)</td>
<td>(General)</td>
<td>(Program)</td>
<td>(Exhibit)</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>Austin</td>
<td>John Graham</td>
<td>David Laude</td>
<td>Isiah Warner and Linda McGown</td>
<td>Scott McGeorge</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Governing Board Chair)</td>
<td>(General)</td>
<td>(Program)</td>
<td>(Exhibit)</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>Vancouver</td>
<td>Robert G. Michel</td>
<td>Michael Blades</td>
<td>Ronald Williams</td>
<td>Scott McGeorge</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Governing Board Chair)</td>
<td>(General)</td>
<td>(Program)</td>
<td>(Exhibit)</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>Nashville</td>
<td>John Koropchak</td>
<td>Arlene Garrison</td>
<td>Michael Carrabba</td>
<td>Scott McGeorge</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Governing Board Chair)</td>
<td>(General)</td>
<td>(Program)</td>
<td>(Exhibit)</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>Detroit</td>
<td>David A. Laude</td>
<td>David Coleman and L. Felix Schneider</td>
<td>David J. Butcher</td>
<td>Scott McGeorge</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Governing Board Chair)</td>
<td>(General Co-Chairs)</td>
<td>(Program)</td>
<td>(Exhibit)</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>Providence</td>
<td>Michael Carrabba</td>
<td>Robert G. Michel</td>
<td>Mark A. Hayes</td>
<td>Scott McGeorge</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Governing Board Chair)</td>
<td>(General)</td>
<td>(Program)</td>
<td>(Exhibit)</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>Fort Lauderdale</td>
<td>Ronald Williams</td>
<td>Rina Dukor</td>
<td>James Rydzak</td>
<td>Scott McGeorge</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Governing Board Chair)</td>
<td>(General)</td>
<td>(Program)</td>
<td>(Exhibit)</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>Portland</td>
<td>Michael Blades</td>
<td>David Trimble</td>
<td>George Agnes</td>
<td>Scott McGeorge</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Governing Board Chair)</td>
<td>(General)</td>
<td>(Program)</td>
<td>(Exhibit)</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>Quebec City, Canada</td>
<td>Mark Hayes</td>
<td>Denis Boudreau</td>
<td>Paul Farnsworth</td>
<td>Scott McGeorge</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Governing Board Chair)</td>
<td>(General)</td>
<td>(Program)</td>
<td>(Exhibit)</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>Orlando</td>
<td>Diane Parry</td>
<td>Christine Wehrburg</td>
<td>S. Douglas Gilman</td>
<td>Scott McGeorge</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Governing Board Chair)</td>
<td>(General)</td>
<td>(Program)</td>
<td>(Exhibit)</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>Memphis</td>
<td>James Rydzak</td>
<td>Paul Bourassa</td>
<td>Ian R Lewis</td>
<td>Mike Carrabba</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Governing Board Chair)</td>
<td>(General)</td>
<td>(Program)</td>
<td>(Exhibit)</td>
<td></td>
</tr>
</tbody>
</table>

Next year: October 13 - 18, 2019, Palm Springs, CA
<table>
<thead>
<tr>
<th><strong>SOCIETY and COMMITTEE MEETINGS</strong></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>FACSS/SciX ORGANIZATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sunday, October 21</strong></td>
</tr>
<tr>
<td>1:00 - 3:00 pm SciX Long Range Planning Meeting (Conference), <em>Room A702 Atrium level</em></td>
</tr>
<tr>
<td>4:00 - 6:00 pm FACSS Long Range Planning Meeting (Federation), <em>Room A702 Atrium level</em></td>
</tr>
<tr>
<td>7:15 - 7:45 pm Program Committee, <em>Room A702 Atrium level</em></td>
</tr>
<tr>
<td><strong>Monday, October 22</strong></td>
</tr>
<tr>
<td>12:15 - 1:15 pm SciX 2019 Palm Springs Meeting, <em>Room A702 Atrium level</em></td>
</tr>
<tr>
<td><strong>Tuesday, October 23</strong></td>
</tr>
<tr>
<td>1:45 - 2:45 pm SciX 2020 Reno, <em>Room A702 Atrium level</em></td>
</tr>
<tr>
<td><strong>Wednesday, October 24</strong></td>
</tr>
<tr>
<td>3:45 - 4:15 pm Budget and Finance Committee, <em>Room A702 Atrium level</em></td>
</tr>
<tr>
<td><strong>Thursday, October 25</strong></td>
</tr>
<tr>
<td>12:00 - 2:00 pm Executive Committee Meeting (for the Executive Committee only), <em>Room A702 Atrium level</em></td>
</tr>
<tr>
<td>6:00 - 9:00 pm Governing Board Meeting (light dinner will be provided), <em>Room A702 Atrium level</em></td>
</tr>
<tr>
<td>9:00 pm Governing Board Chair Reception (delegates and invitees), <em>Location TBA</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COBLENZ SOCIETY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Monday, October 22</strong></td>
</tr>
<tr>
<td>7:00 - 9:00 am Coblentz Annual Member Meeting and Breakfast, <em>Room A702 Atrium level</em></td>
</tr>
<tr>
<td>12:00 - 1:15 pm Coblentz and SAS Speed Mentoring Session, <em>Room A602 Atrium level</em>. The Coblentz and SAS Societies are hosting a Speed Mentoring Event. Prospective mentors and mentees will interact in a fun, fast-paced one-on-one setting to meet other scientists, expand professional networks, and potentially form a mentoring relationship. Registration is free and lunch will be provided.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SOCIETY FOR APPLIED SPECTROSCOPY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sunday, October 21</strong></td>
</tr>
<tr>
<td>12:00 - 4:00 pm SAS Executive Committee, <em>Room A708 Atrium level</em></td>
</tr>
<tr>
<td>7:00 - 9:00 pm SAS Student Poster Session, <em>Imperial B</em></td>
</tr>
<tr>
<td><strong>Monday, October 22</strong></td>
</tr>
<tr>
<td>9:00 - 11:00 am SAS Membership/Marketing Committee, <em>Room A708 Atrium level</em></td>
</tr>
<tr>
<td>1:00 - 3:00 pm SAS Publications Committee, <em>Room A708 Atrium level</em></td>
</tr>
<tr>
<td>8:00 - 11:00 pm SAS Student Event, <em>Braves All Star Grill</em></td>
</tr>
<tr>
<td><strong>Tuesday, October 23</strong></td>
</tr>
<tr>
<td>11:45 - 1:40 pm SAS Editorial Board Meeting, <em>Room A708 Atrium level</em></td>
</tr>
<tr>
<td>1:10 pm SAS PAT Technical Section Meeting, <em>Room L504</em></td>
</tr>
<tr>
<td>4:00 - 6:00 pm SAS Governing Board Meeting, <em>Room A708 Atrium level</em></td>
</tr>
<tr>
<td>7:00 – 8:00 pm SAS Award Presentations, <em>Imperial A</em></td>
</tr>
<tr>
<td>8:00 pm – 12:00 am SAS 60th Anniversary Wine and Cheese Reception, <em>Imperial B</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NASLIBS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Monday, October 22</strong></td>
</tr>
<tr>
<td>5:00 - 7:00 pm NASLIBS Board Meeting, <em>Room A702 Atrium level</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sunday, October 21</strong></td>
</tr>
<tr>
<td>4:00 - 6:00 pm AES Board Meeting, <em>Room L404</em></td>
</tr>
<tr>
<td><strong>Monday, October 22</strong></td>
</tr>
<tr>
<td>12:00 - 1:00 pm AES Lunch with Leaders, <em>Room L404</em></td>
</tr>
<tr>
<td><strong>Tuesday, October 23</strong></td>
</tr>
<tr>
<td>12:00 - 1:00 pm AES Business Meeting, <em>Room L404</em></td>
</tr>
</tbody>
</table>

*Next year: October 13 - 18, 2019, Palm Springs, CA*
The exhibit is a focal point of the SciX Conference. Exhibits are the realization of the research presented during the scientific symposia and include innovative instrumentation, software, and supplies. View technologies and products and meet an interesting mix of sales, scientific, and engineering expertise among their representatives.

**Sunday, October 21**
- 4:50 - 6:00 pm What’s Hot Exhibitor Presentations, Imperial A

**Monday, October 22**
- 5:30 - 7:30 pm Exhibit Hall Opening Reception, Exhibit Hall (Atrium Ballroom)
- 5:30 - 6:30 pm Drop off your raffle ticket at Kaiser booth for chance to win iPad
- 6:30 - 7:15 pm Drop off your raffle ticket at HORIBA booth for chance to win iPad

**Tuesday, October 23 and Wednesday, October 24, Exhibit Hall (Atrium Ballroom)**
- 11:00 am - 12:00 pm Complimentary lunch for all attendees in Exhibit Hall, ticket required
- 11:40 am - 1:10 pm What’s Hot Exhibitor Presentations
- 12:00 - 12:30 pm Poster Session and Coffee Break
- 2:30 - 3:30 pm Poster Viewing and Break

**Exhibit Hours**
- Monday 5:30 pm - 7:30 pm
- Tuesday 10:00 am - 4:30 pm
- Wednesday 10:00 am - 4:00 pm

** Exhibition Hours**
- Monday 10:00 am - 4:30 pm
- Tuesday 10:00 am - 4:00 pm
- Wednesday 10:00 am - 4:00 pm

**EXHIBITOR INFORMATION**

<table>
<thead>
<tr>
<th>Location</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACS Division of Analytical Chemistry ..........</td>
<td>ICP Information Newsletter, Inc. .................</td>
</tr>
<tr>
<td>AES Electrophoresis Society .....................</td>
<td>Innovative Photonic Solutions ....................</td>
</tr>
<tr>
<td>Agilent Technologies, Inc. .......................</td>
<td>Kaiser Optical Systems, Inc. ....................</td>
</tr>
<tr>
<td>Altos Photonics, Inc. ............................</td>
<td>Keit Spectrometers ..................................</td>
</tr>
<tr>
<td>Amplitude ............................................</td>
<td>Laser Quantum ........................................</td>
</tr>
<tr>
<td>Analytik Jena .......................................</td>
<td>Litron Lasers, Ltd ..................................</td>
</tr>
<tr>
<td>Anasys Instruments ..................................</td>
<td>LLA Instruments GmbH &amp; Co. KG .....................</td>
</tr>
<tr>
<td>Andor Technology ....................................</td>
<td>LTB LaserTechnik Berlin GmbH .....................</td>
</tr>
<tr>
<td>Anton Paar USA .....................................</td>
<td>Lumibird (formerly Quantel Laser) ................</td>
</tr>
<tr>
<td>Applied Spectra, Inc. ............................</td>
<td>Metrohm USA .........................................</td>
</tr>
<tr>
<td>art photonics GmbH ..................................</td>
<td>MONTFORT Laser GmbH ................................</td>
</tr>
<tr>
<td>Avantes .............................................</td>
<td>Neaspec GmbH ..........................................</td>
</tr>
<tr>
<td>B&amp;W Tek .............................................</td>
<td>Nexcel IP .............................................</td>
</tr>
<tr>
<td>Barnett Technical Services .......................</td>
<td>Neolitics, Inc. .......................................</td>
</tr>
<tr>
<td>BaySpec, Inc. .......................................</td>
<td>Ocean Optics, Inc. ..................................</td>
</tr>
<tr>
<td>Beijing RealLight Technology Co., Ltd ..........</td>
<td>Onadex, Inc. ..........................................</td>
</tr>
<tr>
<td>Bio-Rad Laboratories, Informatics Division ....</td>
<td>Optigrate Corp. ......................................</td>
</tr>
<tr>
<td>BioTools, Inc. ......................................</td>
<td>OptoSigma ............................................</td>
</tr>
<tr>
<td>Block Engineering ..................................</td>
<td>Ostec Instruments ....................................</td>
</tr>
<tr>
<td>Bruker Optics .......................................</td>
<td>Pendar Technologies ..................................</td>
</tr>
<tr>
<td>CAMO Smart Software, Inc. .......................</td>
<td>Photon Systems ......................................</td>
</tr>
<tr>
<td>CloudMinds Technology, Inc ......................</td>
<td>Photothermal Spectroscopy Corp ....................</td>
</tr>
<tr>
<td>Coblenz Society .....................................</td>
<td>PIKE Technologies ..................................</td>
</tr>
<tr>
<td>Cobolt AB ...........................................</td>
<td>Pittcon 2019 ..........................................</td>
</tr>
<tr>
<td>CorActive High-Tech ................................</td>
<td>Princeton Infrared Technologies, Inc ..............</td>
</tr>
</tbody>
</table>
| Czitrek .............................................. | Princeton Instruments, Inc. ........................
| DRS Daylight Solutions ............................ | Renishaw, Inc. ........................................ |
| Eigenvector Research, Inc. ....................... | Royal Society of Chemistry ......................... |
| Elemental Scientific .............................. | RPMC Lasers, Inc. .................................... |
| ELEMISSION ......................................... | SciAps, Inc. .......................................... |
| FACSS / SciX ........................................ | Shimadzu Scientific Instruments, Inc. ............. |
| FiberTech Optica, Inc. ............................ | Society for Applied Spectroscopy ................. |
| Flash Photonics, Inc. ............................. | Specac, Inc. .......................................... |
| Fluid Imaging ....................................... | Spectral Systems LLC ................................ |
| Galbraith .......................................... | SpectroClick, Inc. ................................... |
| Hamamatsu Corporation ............................ | Spectroscopy Magazine / LC/GE Magazine ........... |
| Harrick Scientific ................................. | StellarNet ............................................. |
| Hellma USA .......................................... | Thermo Fisher Scientific ................................|
| High Purity Standards, Inc ...................... | Tornado Spectra System ................................|
| HORIBA Scientific .................................. | TSI Inc. .............................................. |
| Ibsen Photonics ..................................... | US Fiberoptic Technology Inc ...................... |
| ICAVS ............................................... | Wasatch Photonics .................................... |
| ..................................................... | WITec Instruments Corp. ............................ |

Next year: October 13 - 18, 2019, Palm Springs, CA
**SciX EXHIBITORS**

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Booth</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACS Division of Analytical Chemistry</td>
<td>714</td>
</tr>
<tr>
<td>AES Electrophoresis Society</td>
<td>903</td>
</tr>
<tr>
<td>Agilent Technologies, Inc.</td>
<td>702</td>
</tr>
<tr>
<td>Altos Photonics, Inc</td>
<td>809</td>
</tr>
<tr>
<td>Amplitude</td>
<td>114</td>
</tr>
<tr>
<td>Analytik Jena US LLC</td>
<td>505</td>
</tr>
<tr>
<td>Anasys Instruments</td>
<td>117</td>
</tr>
<tr>
<td>Andor Technology</td>
<td>417</td>
</tr>
<tr>
<td>Anton Paar USA</td>
<td>703</td>
</tr>
<tr>
<td>Applied Spectra, Inc</td>
<td>614</td>
</tr>
<tr>
<td>art photonics GmbH</td>
<td>103</td>
</tr>
<tr>
<td>Avantes</td>
<td>212</td>
</tr>
<tr>
<td>B&amp;W Tek</td>
<td>512</td>
</tr>
<tr>
<td>Barnett Technical Services</td>
<td>206</td>
</tr>
<tr>
<td>BaySpec, Inc.</td>
<td>216</td>
</tr>
<tr>
<td>Beijing RealLight Technology Co., Ltd</td>
<td>710</td>
</tr>
<tr>
<td>Bio-Rad Laboratories, Informatics Division</td>
<td>810</td>
</tr>
<tr>
<td>BioTools, Inc</td>
<td>802</td>
</tr>
<tr>
<td>Block Engineering</td>
<td>111</td>
</tr>
<tr>
<td>Bruker Optics</td>
<td>217</td>
</tr>
<tr>
<td>CAMO Smart Software, Inc.</td>
<td>846</td>
</tr>
<tr>
<td>CloudMinds Technology, Inc</td>
<td>915-TT</td>
</tr>
<tr>
<td>Coblentz Society</td>
<td>104</td>
</tr>
<tr>
<td>Cobolt AB</td>
<td>115</td>
</tr>
<tr>
<td>CorActive High-Tech</td>
<td>911-TT</td>
</tr>
<tr>
<td>Cztek</td>
<td>109</td>
</tr>
<tr>
<td>DRS Daylight Solutions</td>
<td>102</td>
</tr>
<tr>
<td>Eigenvector Research, Inc.</td>
<td>611</td>
</tr>
<tr>
<td>Elemental Scientific</td>
<td>705</td>
</tr>
<tr>
<td>ELEMISHAN</td>
<td>712</td>
</tr>
</tbody>
</table>

**Next year:** October 13 - 18, 2019, Palm Springs, CA
SciX EXHIBITORS

FACSS / SciX ..............................................Booth 817
2019 Gallisteo St., Bldg I-1
Santa Fe, NM 87505
www.facss.org / www.scixconference.org

FiberTech Optica, Inc. .................................Booth 215
330 Gage Avenue, Ste 1
Kitchener, ON N2M 5C6 Canada
www.fibertech-optica.com

Flash Photonics, Inc. ..................................Booth 313
PO Box 2197
Redmond, WA 98073
www.flashanalysis.com

Fluid Imaging .............................................Booth 914-TT
200 Enterprise Drive
Scarborough, ME 04074
www.fluidimaging.com

Galbraith ..................................................Booth 811
2323 Sycamore Dr
Knoxville, TN 37921
http://galbraith.com

Hamamatsu Corporation ..............................Booth 709
360 Foothill Road
Bridgewater, NJ 08807
www.hamamatsu.com

Harrick Scientific .........................................Booth 112
141 Tompkins Ave, Box 277
Pleasantville, NY 10570
www.harricksci.com

Hellma USA ..............................................Booth 517
80 Skyline Drive
Plainview, NY 11704
www.hellmausa.com

High Purity Standards, Inc. ..........................Booth 706
P.O. Box 41727
4741 Franchise Street
Charleston, SC 29418
www.hps.net

HORIBA Scientific ......................................Booth 407
Attn: Raman Spectroscopy
3880 Park Avenue
Edison, NJ 08820
www.horibacom/scientific

Ibsen Photonics .......................................Booth 717
Ryttermarken 15-21
Farum, Denmark DK-3520
www.ibsen.com

ICAVS ........................................Booth 910-TT
www.icavs.org/2019-conference/

ICP Information Newsletter, Inc. .................Booth 905
PO Box 666
Hadley, MA 01035-0666
http://icpinformation.org

Innovative Photonic Solutions ......................Booth 307
4250 U. S. Highway 1, Ste 1
Monmouth Junction, NJ 08852
www.innovativephotonics.com

Kaiser Optical Systems, Inc. .........................Booth 505
371 Parkland Plaza
Ann Arbor, MI 48103
www.kosi.com

Keit Spectrometers .................................Booth 814
Rutherford Appleton Lab, R71, Harwell Campus
Didcot, OX11 0QX UK
www.keit.co.uk

Laser Quantum ........................................Booth 110
47673 Lakeview Boulevard
Fremont, CA 94538
www.laserquantum.com

Llitron Lasers, Ltd .................................Booth 806
8 consul Road
Rugby, Warwickshire, CV21 1PG UK
www.litronlasers.com

LLA Instruments GmbH & Co. KG .................Booth 708
Justus-von-Liebig-Str. 9/11
Berlin, 12489 Germany
www.lla.de

LTB Lasertechnik Berlin GmbH ..................Booth 214
Am Studio 2c
Berlin 12489, Germany
www.ltb-berlin.de

Lumibird (formerly Quantel Laser) ...............Booth 805
49 Willow Peak Dr
Bozeman, MT 59718
www.quantel-laser.com

Metrohm USA ..........................................Booth 603
6555 Pelican Creek Circle
Riverview, FL 33578
www.metrohmusa.com

MONTFORT Laser GmbH ............................Booth 210
Im Holderlob 6A
Goetzix, VA 6840, Austria
www.montfortlaser.com

Neaspec GmbH .................................Booth 807
Bunsenstrasse 5
Martinsried, 82152 Germany
www.neaspec.com

Neospec GmbH ........................................Booth 607
30-B Pennington-Hopewell Road
Pennington, NJ 08534
www.nd-lid.com

Necsel IP ........................................Booth 116
7000 N Point Rd, Unit 1
Sparrows Point, MD 21219
http://neospec.com

Ocean Optics, Inc. .................................Booth 205
830 Douglas Avenue
Dunedin, FL 34698
www.oceanoptics.com

Ondax, Inc. ........................................Booth 310
850 E. Duarte Road
Monrovia, CA 91016
www.ondax.com

Optigrate Corp .........................................Booth 202
562 S Econ Circle
Oviedo, FL 32765
www.optigrate.com

OptoSigma ........................................Booth 913-TT
3210 S. Croddy Way
Santa Ana, CA 92704
www.america.optimus.com

Next year: October 13 - 18, 2019, Palm Springs, CA
Ostec Instruments ...................................... Booth 208
Moldavskaya 5 Building 2
Moscow, 121467 Russia
www.ostec-instruments.com

Pendar Technologies .................................... Booth 106
30 Spinelli Place
Cambridge, MA 02138
www.pendartechnologies.com

Photon Systems .......................................... Booth 812
1512 Industrial Park Street
Covina, CA 91722-3417
www.photonsystems.com

Photothermal Spectroscopy Corp .................... Booth 713
325 Chapala Street
Santa Barbara, CA 93101
www.photothermal.com

PIKE Technologies ...................................... Booth 716
6125 CottonWood Drive
Madison, WI 53719
www.piketech.com

Pittcon 2019 ............................................ Booth 515
300 Penn Center Blvd #332
Pittsburgh, PA 15235
www.pittcon.org

Princeton Infrared Technologies, Inc. ............ Booth 803
9 Deep Park Dr, Ste J5
Monmouth Junction, NJ 08852
www.princetonirtech.com

Princeton Instruments, Inc. ............................ Booth 314
3660 Quakerbridge Road
Trenton, NJ 08620
www.princetoninstruments.com

Renishaw, Inc. ........................................... Booth 301
5277 Trillium Blvd.
Hoffman Estates, IL 60192
www.renishaw.com

Royal Society of Chemistry ............................ Booth 904
Thomas Graham House
Science Park, Milton Road
Cambridge, UK CB4 0WF
www.rsc.org

RPMC Lasers, Inc. ....................................... Booth 516
203 Joseph Street
Ofallon, MO 63366
www.rpmclasers.com

SciAps, Inc. ............................................ Booth 113
2 Constitution Way
Woburn, MA 01801
www.sciaps.com

Shimadzu Scientific Instruments, Inc. ............ Booth 213
7102 Riverwood Drive
Columbia, MD 21046
www.ssi.shimadzu.com

Society for Applied Spectroscopy .................... Booth 105
168 West Main Street #300
New Market, MD 21774
www.s-a-s.org

Specac, Inc. ........................................... Booth 613
414 Commerce Dr, Suite 175
Fort Washington, PA 19034
www.specac.com

Spectral Systems LLC .................................. Booth 813
35 Corporate Park Drive
Hopewell Junction, NY 12533
www.spectral-systems.com

SpectroClick, Inc. ....................................... Booth 211
60 Hazelwood Dr, Room 226A
Champaign, IL 61820
www.spectroclick.com

Spectroscopy Magazine / LCGC Magazine ........ Booth 901
485F US Highway 1 South, Ste 100
Iselin, NJ 08830
www.spectroscopyonline.com

StellarNet ............................................... Booth 912-TT
14390 Carlson Circle
Tampa, FL 33626
www.StellarNet.us

Thermo Fisher Scientific .............................. Booth 707
2 Radcliff Road
Tewksbury, MA 01876
www.thermoscientific.com/portableid

Tornado Spectral System .............................. Booth 108
555 Richmond Street West, Suite 402
Toronto, ON M5V 3B1 Canada
www.tornado-spectral.com

TSI Inc. ................................................ Booth 808
500 Cardigan Road
St. Paul, MN 55126
www.tsi.com

US Fiberoptec Technology Inc. ....................... Booth 711
175 Bernal Road
San Jose, CA 95119-1343
http://usfiberoptec.com

Wasatch Photonics ...................................... Booth 615
4022 Stirrup Creek Drive, Ste 311
Durham, NC 27703
www.wasatchphotonics.com

WITec Instruments Corp. ............................. Booth 413
130G Market Place Blvd
Knoxville, TN 37922
www.WITec-Instruments.com
<table>
<thead>
<tr>
<th><strong>SUNDAY</strong></th>
<th><strong>TUESDAY</strong></th>
</tr>
</thead>
</table>
| **Basic Chemometrics**  
Instructor: Barry Wise; *Eigenvector*  
Date/Time: October 21 / 9:00 am - 4:00 pm  
Rates: Conferee $450; Student $50; Non-Conferee $550 | **Basics of Multivariate Modeling of Spectroscopic Data**  
Instructor: Heather Brooke; *CAMO Software*  
Date/Time: October 23 / 9:00 am - 4:00 pm  
Rate: Conferee $450; Student $50; Non-Conferee $550 |
| **Classification of Unknown Materials Using Microscopy and Spectroscopy**  
Instructors: Rich Brown, Bill Turner, Kathryn Grossack; *MVA Scientific Consultants*  
Date/Time: October 21 / 9:00 am - 4:00 pm  
Rates: Conferee $450; Student $50; Non-Conferee $550 | **Laser Fundamentals for Spectroscopy**  
Instructor: Robert Chimenti; *RVC Photonics / Rowan University*  
Date/Time: October 23 / 1:00 - 4:00 pm  
Rates: Conferee $225; Student $25; Non-Conferee $325 |
| **Electrokinetic Microfluidics, Theory and Hands on Problems**  
Instructor: Neil Ivory; *Washington State University*  
Date/Time: October 21 / 9:00 am - 4:00 pm  
Rate: Conferee $450; Student $50; Non-Conferee $550 | **Process Analytical Technology: Out of the Lab and into the Line**  
Instructor: Jim Rydzak; *Specere Consulting*  
Date/Time: October 24 / 9:00 am - 4:00 pm  
Rate: Conferee $450; Student $50; Non-Conferee $550 |
| **Laser Induced Plasma Emission: from Atomic to Molecular Spectra**  
Instructors: Alessandro de Giacomo; *University of Bari & CNRS Marseille*  
Date/Time: October 21 / 9:00 am - 12:00 pm  
Rate: Conferee $225; Student $25; Non-Conferee $325 | **Navigating the Startup World as a Female or Minority Founder**  
Samantha Friedman; *FairFounders*  
Date/Time: October 24 / 9:00 am - 12:00 pm  
Rate: $25 for all |
| **Advance Applications of LAICPOES, LAICPMS and LIBS**  
Instructor: Jhanis Gonzales; *Applied Spectra / Lawrence Berkeley National Laboratory*  
Date/Time: October 21 / 1:00 - 4:00 pm  
Rate: Conferee $225; Student $25; Non-Conferee $325 | **Developing Strategies and Hands-On Activities for Effective STEM Outreach**  
Instructor: Melodie Knowlton; *Vertex Pharmaceuticals*  
Date/Time: October 24 / 1:00 - 4:00 pm  
Rate: $25 for all |
| **Variable Selection**  
Instructor: Robert T. Roginski; *Eigenvector*  
Date/Time: October 22 / 9:00 am - 12:00 pm  
Rate: Conferee $225; Student $25; Non-Conferee $325 | **Non-Linear Methods for Regression and Classification**  
Instructor: Donal O’Sullivan; *Eigenvector*  
Date/Time: October 22 / 1:00 - 4:00 pm  
Rate: Conferee $225; Student $25; Non-Conferee $325 |
| **Hands-on Applications of LIBS for Real Analytical Problems**  
Instructor: François Doucet; *Elemission*  
Date/Time: October 22 / 1:00 - 4:00 pm  
Rate: Conferee $225; Student $25; Non-Conferee $325 | **Analytical Quality Control in a Microbrewery Tour**  
Sweetwater Brewery **offsite event, 21 and over, closed toed shoes**  
Instructor: Ben Chambers; *Sweetwater Brewery*  
Date/Time: October 22 / 1:00 - 4:00 pm  
Rates: Conferee $40; Student $25; Non-Conferee $50 |

Next year: October 13 - 18, 2019, Palm Springs, CA
## PROGRAM OVERVIEW

### SUNDAY

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:50 pm</td>
<td>WHAT'S HOT VENDOR PRESENTATIONS, Imperial A</td>
<td></td>
</tr>
<tr>
<td>6:15 pm</td>
<td>KEYNOTE LECTURE, On Polymer Seas: The Rising Tide of Plastic in the Ocean and What to Do about It, Matthew Savoca, Hopkins Marine Station, Stanford University, Imperial A</td>
<td></td>
</tr>
<tr>
<td>7:15 pm</td>
<td>WELCOME MIXER, SAS Sponsored Student Poster Session, Coblenz Student Awards, FACSS Student and Tomas Hirschfeld Scholar Awards, Room Imperial B</td>
<td></td>
</tr>
</tbody>
</table>

### MONDAY MORNING

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:45 am</td>
<td>OPENING ADDRESS, Imperial A</td>
<td></td>
</tr>
<tr>
<td>8:00 am</td>
<td>18PLEN08: International LIBS Plenary</td>
<td></td>
</tr>
<tr>
<td>8:30 am</td>
<td>18PLEN07: 2018 Analyst Emerging Investigator Lectureship from the Royal Society of Chemistry Award Plenary</td>
<td></td>
</tr>
<tr>
<td>9:15 am</td>
<td>SYMPOSIA, page 43</td>
<td></td>
</tr>
<tr>
<td>10:00 am</td>
<td>18AES01: Fundamentals of Electrokinetics, Room L401</td>
<td></td>
</tr>
<tr>
<td>10:15 am</td>
<td>18ATOM05: Laser Ablation-Based Spectroscopy Techniques: Fundamentals and Applications, Room A706</td>
<td></td>
</tr>
<tr>
<td>10:30 am</td>
<td>18AWD11: 2018 Analyst Emerging Investigator Lectureship from the Royal Society of Chemistry Award Symposium Honoring Wei Min, Room L505</td>
<td></td>
</tr>
<tr>
<td>10:45 am</td>
<td>18FORENS04: Forensic Analysis in the Lab and at the Crime Scene, Room L503</td>
<td></td>
</tr>
<tr>
<td>11:00 am</td>
<td>18IR10: 2D Correlation Spectroscopy I, Room A707</td>
<td></td>
</tr>
<tr>
<td>11:15 am</td>
<td>18LIBS01: LIBS 2018 - Fundamentals, Room A601</td>
<td></td>
</tr>
<tr>
<td>11:30 am</td>
<td>18PMA03: New Frontiers in Chirality, Room A704</td>
<td></td>
</tr>
<tr>
<td>11:45 am</td>
<td>18RAM01: Emerging Raman, Room A703</td>
<td></td>
</tr>
<tr>
<td>12:00 pm</td>
<td>18RAM13: Raman Spectroscopy for Food Security, Room L508</td>
<td></td>
</tr>
<tr>
<td>12:15 pm</td>
<td>18SPECIAL03: Joint Pittcon/FACSS Session: Analytical Techniques to Address Plastic Pollution, Room L506</td>
<td></td>
</tr>
<tr>
<td>12:30 pm</td>
<td>18SPECIAL04: Tribute to the Life and Work of Theodore Rains, Room L504</td>
<td></td>
</tr>
<tr>
<td>12:45 pm</td>
<td>18SPS01: Frontiers of Vacuum, Far, and Deep-Ultraviolet Spectroscopy II, Room L507</td>
<td></td>
</tr>
<tr>
<td>1:00 pm</td>
<td>POSTER SESSION &amp; BREAK, Imperial B, page 45</td>
<td></td>
</tr>
</tbody>
</table>

### MONDAY AFTERNOON

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 pm</td>
<td>SYMPOSIA, page 50</td>
<td></td>
</tr>
<tr>
<td>1:30 pm</td>
<td>18ATOM01: Low Pressure Glow Discharge Spectroscopy: Fundamentals and Applications, Room A706</td>
<td></td>
</tr>
<tr>
<td>1:45 pm</td>
<td>18AWD06: AES Lifetime Achievement Award Symposium Honoring Norman Dovichi, Room L401</td>
<td></td>
</tr>
<tr>
<td>2:00 pm</td>
<td>18BIM02: Translation and Commercialization of Analytical Technologies, Room L506</td>
<td></td>
</tr>
<tr>
<td>2:15 pm</td>
<td>18IR11: 2D Correlation Spectroscopy II, Room A707</td>
<td></td>
</tr>
<tr>
<td>2:30 pm</td>
<td>18LIBS07: LIBS 2018 - Industrial Automation, Room A601</td>
<td></td>
</tr>
<tr>
<td>2:45 pm</td>
<td>18PAT02: SAS PAT Technical Section: PAT in the Biopharmaceutical Industries Session II, Room L504</td>
<td></td>
</tr>
<tr>
<td>3:00 pm</td>
<td>18PMA06: Extraneous Matter Investigations In Safe Pharmaceutical Manufacturing, Room A704</td>
<td></td>
</tr>
<tr>
<td>3:15 pm</td>
<td>18RAM03: Bioanalytical SERS I, Room L508</td>
<td></td>
</tr>
<tr>
<td>3:30 pm</td>
<td>18RAM12: Structural Characterization with Low Frequency Raman, Room A703</td>
<td></td>
</tr>
<tr>
<td>3:45 pm</td>
<td>18SPECIAL08: Novel Approaches to Biological Materials Analysis, Room L503</td>
<td></td>
</tr>
<tr>
<td>4:00 pm</td>
<td>18SPR06: New Science and Applications for Plasmonic Nanoparticles and Substrates, Room L505</td>
<td></td>
</tr>
<tr>
<td>4:15 pm</td>
<td>18SPS02: Frontiers of Vacuum-, Far-, and Deep-Ultraviolet Spectroscopy 2, Room L507</td>
<td></td>
</tr>
<tr>
<td>4:30 pm</td>
<td>SYMPOSIA, page 53</td>
<td></td>
</tr>
<tr>
<td>4:30 pm</td>
<td>18AES07: Electrokinetic Biosensors &amp; Spectroscopy, Room L401</td>
<td></td>
</tr>
<tr>
<td>4:45 pm</td>
<td>18ATOM02: Recent Advances in Liquid Electrode Glow Discharge Plasmas, Room A706</td>
<td></td>
</tr>
<tr>
<td>5:00 pm</td>
<td>18BIM05: Spectroscopy and Precision Medicine, Room L506</td>
<td></td>
</tr>
<tr>
<td>5:15 pm</td>
<td>18FORENS01: Nuclear Forensics, Room L503</td>
<td></td>
</tr>
<tr>
<td>5:30 pm</td>
<td>18IR08: 2D Correlation Spectroscopy III, Room A707</td>
<td></td>
</tr>
<tr>
<td>5:45 pm</td>
<td>18LIBS03: LIBS 2018 - Biomedical and Pharmaceutical Applications, Room A601</td>
<td></td>
</tr>
<tr>
<td>6:00 pm</td>
<td>18PAT06: PAT Enabled Flow Chemistry and Continuous Manufacturing, Room L504</td>
<td></td>
</tr>
<tr>
<td>6:15 pm</td>
<td>18PMA07: Applications of Advanced Vibrational Spectroscopy to Protein Characterization, Room A704</td>
<td></td>
</tr>
<tr>
<td>6:30 pm</td>
<td>18RAM04: Bioanalytical SERS II, Room L508</td>
<td></td>
</tr>
<tr>
<td>6:45 pm</td>
<td>18RAM17: Raman Optical Activity, Room A703</td>
<td></td>
</tr>
<tr>
<td>7:00 pm</td>
<td>18SPR02: Plasmonics of Anisotropic Nanostructures, Room L505</td>
<td></td>
</tr>
<tr>
<td>7:15 pm</td>
<td>18SPS04: Spectroscopic Analysis of Organic Semiconductor Thin Films, Room L507</td>
<td></td>
</tr>
<tr>
<td>7:30 pm</td>
<td>Exhibit Opening, Exhibit Hall (Atrium Ballroom)</td>
<td></td>
</tr>
</tbody>
</table>

Next year: October 13 - 18, 2019, Palm Springs, CA
PROGRAM OVERVIEW

TUESDAY MORNING

7:45 am  Awards for Monday student posters, Imperial A
PLENARY LECTURES, Imperial A, page 56
8:00 am  18PLEN04: Charles Mann Award for Raman
Spectroscopy Plenary
8:30 am  18PLEN01: Applied Spectroscopy William F.
Meggers Award Plenary
9:15 am  SYMPOSIA, page 56
18AES04: Nanoscale Electrokinetics, Room L401
18ATOM04: Excitation and Ionization
Techniques for Atomic and Molecular
Spectroscopy, Room A706
18BIM06: Biomedical Spectroscopy, Room L506
18FORENS03: Chemometrics In Forensics, Room
L503
18IR05: Quantum Cascade Lasers – I, Room A707
18LIBS02: LIBS 2018 - Molecular Signal in
LIBS, Room A601
18PMA02: Solving Industrial Problems with
Vibrational Spectroscopy, Room A704
18RAM05: Bioanalytical SERS III, Room L508
18RAM08: Transmission Raman Spectroscopy, Room
L505
18SPECIAL01: Chemistry in Art and
Archaeology Sponsored by the Society for
Archaeological Sciences, Room L504
18SPECIAL06: Past, Present and Future:
Celebrating 60 Years of SAS and
Spectroscopy Innovations, Room A703
18SPSJ03: Near Infrared Spectroscopy, Room
L507

3:10 pm  POSTER SESSION & BREAK, Exhibit Hall
(Atrium Ballroom)

3:50 pm  SYMPOSIA, page 64
18AES05: Electrophoresis in Industry And In
Teaching I, Room L401
18ATOM08: Solving Challenging Applications
With ICP-MS, Room A706
18AWD01: William F. Meggers Award
Symposium Honoring S. Michael Angel, Room
L508
18CHEM06: Something Old, Something New,
Something Borrowed, Room L503
18CTP05: Analytical Chemists Embracing
Sustainability: Open Source Instrumentation,
Room L506
18IR03: New Chemical Imaging Instrumentation,
Room A707
18LIBS06: LIBS 2018 - Forensics And Security 1,
Room A601
18MASS03: Advances in MS Ionization, Room
L507
18PAT05: Advances In On-Line Process
Analysis, Room L504
18PMA11: Synthetic Biology & Bioprocessing,
Room A704
18RAM09: Raman Microscopy, Room A703
18SPR04: Portable Sensing Technologies, Room
L505

TUESDAY AFTERNOON

1:10 pm  SAS PAT Technical Section Meeting, Room L504
1:30 pm  SYMPOSIA, page 61
18AES03: Microscale Electrokinetics and
Electroporation, Room L401
18ATOM03: Recent Developments in
Atmospheric-Pressure Glow Discharge
Sources for Elemental and Molecular
Spectroscopy, Room A706
18AWD04: Mann Award - The Driving Forces
Behind the Growth of Raman Spectroscopy, Room
L508
18CTP04: Early Career Professional
Development: A Mini-Workshop, Room L506

WEDNESDAY MORNING

7:45 am  Awards for Tuesday student posters, Imperial A
PLENARY LECTURES, Imperial A, page 67
8:00 am  18PLEN06: Spectroscopy’s Emerging Leader In
Molecular Spectroscopy Award Plenary
8:30 am  18PLEN05: AES Electrophoresis Mid Career
Award Plenary
9:15 am  SYMPOSIA, page 67
18AES06: ACS-AES Joint Session: Electric
Fields and Microbioanalysis, Room L401
18ATOM09: Sophisticated Quantitative
Analytical Applications with ICP-MS, Room
A706
PROGRAM OVERVIEW

18AWD08: Spectroscopy’s Emerging Leader In Molecular Spectroscopy Award Symposium Honoring Megan Thielges, Room L508
18BIM01: Infectious Diseases: The Unmet Medical Need, Room L506
18CHEM03: Chemometric Opportunities in the Forensic Sciences, Room L503
18IR07: Point-Of-Care Testing With Spontaneous And Surface-Enhanced Raman Spectroscopies, Room A707
18LIBS08: LIBS 2018 - Instrumentation Development, Room A601
18MASS01: Native Mass Spectrometry, Room L504
18NANO01: Combining Light and Electrochemistry in Nanostructures (I), Room L507
18PMA08: Emerging Vibrational Technologies for Biopharma Today, Room A704
18RAM11: Stand-off Raman spectroscopy, Room A703
18SPR01: Applications to Plasmonic Nanostructures, Room L505

11:00 am POSTER SESSION & BREAK, Exhibit Hall (Atrium Ballroom), page 69

18WPATOM: Wed. Posters: Atomic Spectroscopy
18WPCHROM: Wed. Posters: Chromatography
18WPLIBS: Wed. Posters: Laser-Induced Breakdown Spectroscopy
18WPSSENS: Wed. Posters: Stand-off Sensing

11:40 am WHAT'S HOT EXHIBITOR PRESENTATIONS Exhibit Hall (Atrium Ballroom), page 69

WEDNESDAY AFTERNOON

1:30 pm SYMPOSIA, page 72
18AES02: Electrokinetics for Separation and Cellular Analysis, Room L401
18AWD10: Bruce R. Kowalski Award in Chemometrics Symposium Honoring Andrew Weakley, Room A706
18BIM03: Analytical Technologies in Infectious Diseases I: Molecular Methods, Room L506
18CHEM05: Chemometrics in Industry, Room L503
18IR06: Quantum Cascade Lasers − I, Room A707
18LIBS09: LIBS 2018 - Nanoparticles, Room A601
18MASS02: Intact Protein Analysis, Room L504
18NANO02: Combining Light and Electrochemistry in Nanostructures (II), Room L507
18PMA05: Spectroscopic Techniques for Downstream Bioprocess Monitoring, Room A704
18RAM07: Biomedical Raman Spectroscopy, Organized by CLIRSPEC, Room L508

3:10 pm POSTER SESSION & BREAK, Exhibit Hall (Atrium Ballroom)

3:50 pm SYMPOSIA, page 75
18ATOM06: New Plasma Sources for Elemental Analysis, Room A706
18AWD07: AES Mid-Career Award Symposium Honoring Michael Roper, Room L401
18BIM04: Analytical Technologies In Infectious Diseases I: Spectroscopic Methods, Room L506
18CHEM04: Spanning the Calibration Space, Room L503
18IR01: NanoIR/NanoRaman II, Room A707
18LIBS05: LIBS 2018 - Geology And Environment, Room A601
18NANO03: Combining Light and Electrochemistry in Nanostructures (III), Room L507
18PAT01: SAS PAT Technical Section: PAT In The Pharmaceutical Industries I, Room L504
18PMA09: Counterfeits and Drug Safety, Room A704
18RAM06: IRDG, Room L508
18RAM14: Raman Spectroscopic Sensing, Room A703
18SPECIAL09: Novel Approaches to Biological Materials Analysis, Room L505

THURSDAY MORNING

7:45 am Awards for Wednesday student posters, Imperial A

PLENARY LECTURES, Imperial A, page 78
8:00 am 18PLEN03: Anachem Award Plenary
8:30 pm 18PLEN02: Lester W. Strock Award Plenary
9:15 am SYMPOSIA, page 78
18AWD02: Lester Strock Award Symposium Honoring Javier Laserna, Room A601
18AWD03: ANACHEM Award Session, Room A706
18CHEM02: Chemometrics and Image Analysis: Two Sides of the Same Coin, Room L503
18CTP01: Analytical Chemists Easing World Poverty: Frugal Healthcare, Room L507
18IR04: Clinical Applications of IR Spectroscopy and Imaging, Room A707
18MASS04: Activity-Based Mass Spectrometry, Room L504
18PMA01: Pharmaceutical Atomic Spectroscopy, Room A704
18PAT07: Modeling for Continuous Manufacturing, Room L505
18RAM02: Time-Resolved & Nonlinear Raman and IR, Room L508
18RAM10: Spatially Offset Raman Spectroscopy (SORS), Room A703
PROGRAM OVERVIEW

18SPECIAL02: Joint Pittcon/FACSS Session: Analysis of Microplastics II, Room L506

11:00 am POSTER SESSION & BREAK, Room Imperial B, page 80
18THPCHEM: Thurs. Posters: Chemometrics
18THPENVIR: Thurs. Posters: Environmental Analysis
18THPFORENS: Thurs. Posters: Forensics
18THPLIBS: Thurs. Posters: Laser-Induced Breakdown Spectroscopy
18THPMASS: Thurs. Posters: Mass Spectrometry
18THPMICRO: Thurs. Posters: Microscopy and Imaging
18THPPAT: Thurs. Posters: Process Analytical Technology

THURSDAY AFTERNOON

1:30 pm SYMPOSIA, page 85
18ATOM07: Atomic Spectroscopy: Solving Problems in Bio/Nano Applications, Room A706
18CHEM01: New Frontiers in Chemometrics, Room L503
18CTP03: K12 STEM Education: Inspiration, Innovation, Room L507

18IR02: Applications of Nanoscale IR Spectroscopy to Polymeric Materials, Room A707
18LIBS10: LIBS 2018 - Method Validation, Room A601
18MASS05: MS-Based Protein Analysis, Room L504
18PAT03: Industrial Applications of Vibrational Spectroscopy, Room L505
18PMA10: Spectroscopy for Biopharma Process Monitoring and Control, Room A704
18RAM15: Joint Pittcon/FACSS Session: Raman Spectroscopy and Forensics, Room A703
18SPECIAL05: Celebrating the FACSS Membership of CLIRSPEC, Room L508

3:10 pm POSTER SESSION & BREAK, Room Imperial B

3:50 pm PLENARY SESSION, Imperial A, page 88

FACSS Distinguished Service Award Symposium

FRIDAY MORNING

SPECIAL PLENARY SESSION, Room A703-704, page 88

7:30 am Wake up coffee and pastries
7:45 am Awards for Thursday student posters
8:00 am 18SCIFRI01: The Science of Science Fiction, Room A703-704

Next year: October 13 - 18, 2019, Palm Springs, CA
### TECHNICAL PROGRAM OVERVIEW BY TOPIC

#### AES, Room L401

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Session</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>(9:15 AM)</td>
<td>18AES01: Fundamentals of Electrokinetics</td>
<td>Imperial A</td>
</tr>
<tr>
<td>Monday</td>
<td>(3:50 PM)</td>
<td>18AES07: Electrokinetic Biosensors &amp; Spectroscopy</td>
<td>Room L401</td>
</tr>
<tr>
<td>Tuesday</td>
<td>(9:15 AM)</td>
<td>18AES04: Nanoscale Electrokinetics</td>
<td>Room L401</td>
</tr>
<tr>
<td>Tuesday</td>
<td>(1:30 PM)</td>
<td>18AES03: Microscale Electrokinetics and Electroporation</td>
<td>Room L401</td>
</tr>
<tr>
<td>Tuesday</td>
<td>(3:50 PM)</td>
<td>18AES05: Electrophoresis In Industry and in Teaching</td>
<td>Room L401</td>
</tr>
<tr>
<td>Wednesday</td>
<td>(9:15 AM)</td>
<td>18AES06: ACS-AES Joint Session: Electric Fields and Microbioanalysis</td>
<td>Room L401</td>
</tr>
<tr>
<td>Wednesday</td>
<td>(1:30 PM)</td>
<td>18AES02: Electrokinetics for Separation and Cellular Analysis</td>
<td>Room L401</td>
</tr>
</tbody>
</table>

#### ATOMIC SPECTROSCOPY, Room A706

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Session</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>(9:15 AM)</td>
<td>18ATOM05: Laser Ablation-Based Spectroscopy Techniques: Fundamentals and Applications</td>
<td></td>
</tr>
<tr>
<td>Monday</td>
<td>(1:30 PM)</td>
<td>18ATOM01: Low Pressure Glow Discharge Spectroscopy: Fundamentals and Applications</td>
<td></td>
</tr>
<tr>
<td>Monday</td>
<td>(3:50 PM)</td>
<td>18ATOM02: Recent Advances in Liquid Electrode Glow Discharge Plasmas</td>
<td>Room A706</td>
</tr>
<tr>
<td>Tuesday</td>
<td>(9:15 AM)</td>
<td>18ATOM04: Excitation and Ionization Techniques for Atomic and Molecular Spectroscopy</td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td>(1:30 PM)</td>
<td>18ATOM03: Recent Developments in Atmospheric-Pressure Glow Discharge Sources for Elemental and Molecular Spectroscopy</td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td>(3:50 PM)</td>
<td>18ATOM08: Solving Challenging Applications With ICP-MS</td>
<td>Room A706</td>
</tr>
<tr>
<td>Wednesday</td>
<td>(9:15 AM)</td>
<td>18ATOM09: Sophisticated Quantitative Analytical Applications with ICP-MS</td>
<td>Room A706</td>
</tr>
<tr>
<td>Wednesday</td>
<td>(3:50 PM)</td>
<td>18ATOM06: New Plasma Sources for Elemental Analysis</td>
<td>Room A706</td>
</tr>
<tr>
<td>Thursday</td>
<td>(1:30 PM)</td>
<td>18ATOM07: Atomic Spectroscopy: Solving Problems in Bio/Nano Applications</td>
<td>Room A706</td>
</tr>
</tbody>
</table>

#### AWARD SYMPOSIA, see rooms below

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Session</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>(9:15 AM)</td>
<td>18AWD11: 2018 Analyst Emerging Investigator</td>
<td>Room L505</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lectureship from the Royal Society of Chemistry Award Symposium Honoring Wei Min</td>
<td></td>
</tr>
<tr>
<td>Monday</td>
<td>(1:30 PM)</td>
<td>18AWD06: AES Lifetime Achievement Award Symposium Honoring Norman Dovichi</td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td>(1:30 PM)</td>
<td>18AWD04: Mann Award - The Driving Forces Behind the Growth of Raman Spectroscopy</td>
<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td>(3:50 PM)</td>
<td>18AWD01: William F. Meggers Awards Symposium Honoring S. Michael Angel</td>
<td>Room L508</td>
</tr>
<tr>
<td>Wednesday</td>
<td>(9:15 AM)</td>
<td>18AWD08: Electrospectroscopy’s Emerging Leader In Molecular Spectroscopy Award Symposium Honoring Megan Thielges</td>
<td></td>
</tr>
<tr>
<td>Wednesday</td>
<td>(3:50 PM)</td>
<td>18AWD07: AES Mid-Career Award Symposium Honoring Michael Roper</td>
<td>Room L401</td>
</tr>
<tr>
<td>Thursday</td>
<td>(9:15 AM)</td>
<td>18AWD02: Lester Strock Award Symposium Honoring Javier Laserna</td>
<td>Room A601</td>
</tr>
<tr>
<td>Thursday</td>
<td>(9:15 AM)</td>
<td>18AWD03: ANACHEM Award Session</td>
<td>Room A706</td>
</tr>
<tr>
<td>Thursday</td>
<td>(3:50 PM)</td>
<td>18AWD09: FACSS Innovation Awards</td>
<td>Room L506</td>
</tr>
</tbody>
</table>

#### BIOLOGICAL/BIOMEDICAL, Room L506

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Session</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>(1:30 PM)</td>
<td>18BIM02: Translation and Commercialization of Analytical Technologies</td>
<td>Room L506</td>
</tr>
<tr>
<td>Monday</td>
<td>(3:50 PM)</td>
<td>18BIM05: Spectroscopy and Precision Medicine</td>
<td>Room L506</td>
</tr>
<tr>
<td>Tuesday</td>
<td>(9:15 AM)</td>
<td>18BIM06: Biomedical Spectroscopy</td>
<td>Room L506</td>
</tr>
<tr>
<td>Wednesday</td>
<td>(9:15 AM)</td>
<td>18BIM01: Infectious Diseases: The Unmet Medical Need</td>
<td>Room L506</td>
</tr>
<tr>
<td>Wednesday</td>
<td>(1:30 PM)</td>
<td>18BIM03: Analytical Technologies in Infectious Diseases I: Molecular Methods</td>
<td></td>
</tr>
<tr>
<td>Wednesday</td>
<td>(3:50 PM)</td>
<td>18BIM04: Analytical Technologies in Infectious Diseases I: Spectroscopic Methods</td>
<td></td>
</tr>
</tbody>
</table>

#### CHEMOMETRICS, Room L503

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Session</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday</td>
<td>(3:50 PM)</td>
<td>18CHEM06: Something Old, Something New, Something Borrowed…</td>
<td>Room L503</td>
</tr>
<tr>
<td>Wednesday</td>
<td>(9:15 AM)</td>
<td>18CHEM03: Chemometric Opportunities in the Forensic Sciences</td>
<td>Room L503</td>
</tr>
<tr>
<td>Wednesday</td>
<td>(1:30 PM)</td>
<td>18CHEM05: Chemometrics in Industry</td>
<td>Room L503</td>
</tr>
</tbody>
</table>
# TECHNICAL PROGRAM OVERVIEW BY TOPIC

<table>
<thead>
<tr>
<th>Wednesday (3:50 PM)</th>
<th>18CHEM04: Spanning the Calibration Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thursday (9:15 AM)</td>
<td>18CHEM02: Chemometrics and Image Analysis: Two Sides of the Same Coin</td>
</tr>
<tr>
<td>Thursday (1:30 PM)</td>
<td>18CHEM01: New Frontiers in Chemometrics</td>
</tr>
</tbody>
</table>

## CONTEMPORARY ISSUES IN ANALYTICAL SCIENCE, see rooms below

<table>
<thead>
<tr>
<th>Tuesday (1:30 PM) Room L506</th>
<th>18CTP04: Early Career Professional Development: A Mini-Workshop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday (3:50 PM) Room L506</td>
<td>18CTP05: Analytical Chemists Embracing Sustainability: Open Source Instrumentation</td>
</tr>
<tr>
<td>Thursday (9:15 AM) Room L507</td>
<td>18CTP01: Analytical Chemists Easing World Poverty: Frugal Healthcare</td>
</tr>
<tr>
<td>Thursday (1:30 PM) Room L507</td>
<td>18CTP03: K12 STEM Education: Inspiration, Innovation</td>
</tr>
</tbody>
</table>

## FORENSICS AND SECURITY, Room L503

<table>
<thead>
<tr>
<th>Monday (9:15 AM)</th>
<th>18FORENS04: Forensic Analysis in the Lab and at the Crime Scene</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday (3:50 PM)</td>
<td>18FORENS01: Nuclear Forensics</td>
</tr>
<tr>
<td>Tuesday (9:15 AM)</td>
<td>18FORENS03: Chemometrics In Forensics</td>
</tr>
<tr>
<td>Tuesday (1:30 PM)</td>
<td>18FORENS02: Food Forensics</td>
</tr>
</tbody>
</table>

## INFRARED SPECTROSCOPY, Room A707

<table>
<thead>
<tr>
<th>Monday (9:15 AM)</th>
<th>18IR10: 2D Correlation Spectroscopy I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday (3:50 PM)</td>
<td>18IR11: 2D Correlation Spectroscopy II</td>
</tr>
<tr>
<td>Monday (3:50 PM)</td>
<td>18IR08: 2D Correlation Spectroscopy III</td>
</tr>
<tr>
<td>Tuesday (9:15 AM)</td>
<td>18IR05: Quantum Cascade Lasers – I</td>
</tr>
<tr>
<td>Tuesday (1:30 PM)</td>
<td>18IR09: Advances in Molecular Spectroscopy</td>
</tr>
<tr>
<td>Tuesday (3:50 PM)</td>
<td>18IR03: New Chemical Imaging Instrumentation</td>
</tr>
<tr>
<td>Wednesday (9:15 AM)</td>
<td>18IR07: Point-Of-Care Testing With Spontaneous And Surface-Enhanced Raman Spectroscopies</td>
</tr>
<tr>
<td>Wednesday (1:30 PM)</td>
<td>18IR06: Quantum Cascade Lasers – I</td>
</tr>
<tr>
<td>Wednesday (3:50 PM)</td>
<td>18IR01: NanoIR/NanoRaman II</td>
</tr>
<tr>
<td>Thursday (9:15 AM)</td>
<td>18IR04: Clinical Applications of IR Spectroscopy and Imaging</td>
</tr>
</tbody>
</table>

## LASER-INDUCED BREAKDOWN SPECTROSCOPY, Room A601

<table>
<thead>
<tr>
<th>Monday (9:15 AM)</th>
<th>18LIBS01: LIBS 2018 - Fundamentals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday (1:30 PM)</td>
<td>18LIBS07: LIBS 2018 - Industrial Automation</td>
</tr>
<tr>
<td>Monday (3:50 PM)</td>
<td>18LIBS03: LIBS 2018 - Biomedical and Pharmaceutical Applications</td>
</tr>
<tr>
<td>Tuesday (9:15 AM)</td>
<td>18LIBS02: LIBS 2018 - Molecular Signal in LIBS</td>
</tr>
<tr>
<td>Tuesday (1:30 PM)</td>
<td>18LIBS04: LIBS 2018 - Archeology and Anthropology</td>
</tr>
<tr>
<td>Tuesday (3:50 PM)</td>
<td>18LIBS06: LIBS 2018 - Forensics And Security I</td>
</tr>
<tr>
<td>Wednesday (9:15 AM)</td>
<td>18LIBS08: LIBS 2018 - Instrumentation Development</td>
</tr>
<tr>
<td>Wednesday (1:30 PM)</td>
<td>18LIBS09: LIBS 2018 - Nanoparticles</td>
</tr>
<tr>
<td>Wednesday (3:50 PM)</td>
<td>18LIBS05: LIBS 2018 - Geology And Environment</td>
</tr>
<tr>
<td>Thursday (1:30 PM)</td>
<td>18LIBS10: LIBS 2018 - Method Validation</td>
</tr>
</tbody>
</table>

## MASS SPECTROMETRY, Room L504 except as noted

<table>
<thead>
<tr>
<th>Tuesday (3:50 PM) Room L507</th>
<th>18MASS03: Advances in MS Ionization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wednesday (9:15 AM)</td>
<td>18MASS01: Native Mass Spectrometry</td>
</tr>
<tr>
<td>Wednesday (1:30 PM)</td>
<td>18MASS02: Intact Protein Analysis</td>
</tr>
<tr>
<td>Thursday (9:15 AM)</td>
<td>18MASS04: Activity-Based Mass Spectrometry</td>
</tr>
<tr>
<td>Thursday (1:30 PM)</td>
<td>18MASS05: MS-Based Protein Analysis</td>
</tr>
</tbody>
</table>

## NANOTECHNOLOGY, Room L507

<table>
<thead>
<tr>
<th>Tuesday (1:30 PM)</th>
<th>18NANO04: Nanofacilitated Sensing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wednesday (9:15 AM)</td>
<td>18NANO01: Combining Light and Electrochemistry in Nanostructures (I)</td>
</tr>
<tr>
<td>Wednesday (1:30 PM)</td>
<td>18NANO02: Combining Light and Electrochemistry in Nanostructures (II)</td>
</tr>
<tr>
<td>Wednesday (3:50 PM)</td>
<td>18NANO03: Combining Light and Electrochemistry in Nanostructures (III)</td>
</tr>
</tbody>
</table>
### TECHNICAL PROGRAM OVERVIEW BY TOPIC

#### PHARMACEUTICAL ANALYSIS, Room A704

**Monday (9:15 AM)**  
18PMA03: New Frontiers in Chirality

**Monday (1:30 PM)**  
18PMA06: Extraneous Matter Investigations In Safe Pharmaceutical Manufacturing

**Monday (3:50 PM)**  
18PMA07: Applications of Advanced Vibrational Spectroscopy to Protein Characterization

**Tuesday (9:15 AM)**  
18PMA02: Solving Industrial Problems with Vibrational Spectroscopy

**Tuesday (1:30 PM)**  
18PMA04: Contributed Pharmaceutical Analysis

**Tuesday (3:50 PM)**  
18PMA11: Synthetic Biology & Bioprocessing

**Wednesday (9:15 AM)**  
18PMA08: Emerging Vibrational Technologies for Biopharma Today

**Wednesday (1:30 PM)**  
18PMA05: Spectroscopic Techniques for Downstream Bioprocess Monitoring

**Wednesday (3:50 PM)**  
18PMA09: Counterfeits and Drug Safety

**Thursday (9:15 AM)**  
18PMA01: Pharmaceutical Atomic Spectroscopy

**Thursday (1:30 PM)**  
18PMA10: Spectroscopy for Biopharma Process Monitoring and Control

#### PROCESS ANALYTICAL TECHNOLOGY, Room L504 except as noted

**Monday (1:30 PM)**  
18PAT02: SAS PAT Technical Section: PAT in the Biopharmaceutical Industries Session II

**Monday (3:50 PM)**  
18PAT06: PAT Enabled Flow Chemistry and Continuous Manufacturing

**Tuesday (1:30 PM)**  
18PAT04: Online Analysis of Industrial Processes and Reactions

**Tuesday (3:50 PM)**  
18PAT05: Advances In On-Line Process Analysis

**Wednesday (3:50 PM)**  
18PAT01: SAS PAT Technical Section: PAT In The Pharmaceutical Industries I

**Thursday (9:15 AM)**  
18PAT07: Modeling for Continuous Manufacturing

**Thursday (1:30 PM)**  
18PAT03: Industrial Applications of Vibrational Spectroscopy

#### RAMAN, see rooms below

**Monday (9:15 AM) Room A703**  
18RAM01: Emerging Raman

**Monday (9:15 AM) Room L508**  
18RAM13: Raman Spectroscopy for Food Security

**Monday (1:30 PM) Room L508**  
18RAM03: Bioanalytical SERS I

**Monday (1:30 PM) Room A703**  
18RAM12: Structural Charactarization with Low Frequency Raman

**Monday (3:50 PM) Room L508**  
18RAM04: Bioanalytical SERS II

**Monday (3:50 PM) Room A703**  
18RAM17: Raman Optical Activity

**Tuesday (9:15 AM) Room L508**  
18RAM05: Bioanalytical SERS III

**Tuesday (9:15 AM) Room L505**  
18RAM08: Transmission Raman Spectroscopy

**Tuesday (3:50 PM) Room A703**  
18RAM09: Raman Microscopy

**Wednesday (9:15 AM) Room A703**  
18RAM11: Stand-off Raman spectroscopy

**Wednesday (1:30 PM) Room L508**  
18RAM07: Biomedical Raman Spectroscopy, Organized by CLIRSPEC

**Wednesday (1:30 PM) Room A703**  
18RAM16: NanoIR/NanoRaman I

**Wednesday (3:50 PM) Room L508**  
18RAM06: IRDG

**Wednesday (3:50 PM) Room A703**  
18RAM14: Raman Spectroscopic Sensing

**Thursday (9:15 AM) Room L508**  
18RAM02: Time-Resolved & Nonlinear Raman and IR

**Thursday (9:15 AM) Room A703**  
18RAM10: Spatially Offset Raman Spectroscopy (SORS)
**TECHNICAL PROGRAM OVERVIEW BY TOPIC**

**Thursday (1:30 PM) Room A703**
18RAM15: Joint Pittcon/FACSS Session: Raman Spectroscopy and Forensics

**SURFACE PLASMON RESONANCE, Room L505**

**Monday (1:30 PM) Room L505**
18SPR06: New Science and Applications for Plasmonic Nanoparticles and Substrates

**Monday (3:50 PM) Room L505**
18SPR02: Plasmonics of Anisotropic Nanostructures

**Tuesday (1:30 PM) Room L505**
18SPR03: Sensing with Plasmonics

**Tuesday (3:50 PM) Room L505**
18SPR04: Portable Sensing Technologies

**Wednesday (9:15 AM) Room L505**
18SPR01: Applications to Plasmonic Nanostructures

**Wednesday (1:30 PM) Room L505**
18SPR05: Plasmon-Enhanced Techniques

**SPECIAL TOPICS, see rooms below**

**Monday (9:15 AM) Room L506**
18SPECIAL03: Joint Pittcon/FACSS Session: Analytical Techniques to Address Plastic Pollution

**Monday (9:15 AM) Room L504**
18SPECIAL04: Tribute to the Life and Work of Theodore Rains

**Monday (1:30 PM) Room L503**
18SPECIAL08: Novel Approaches to Biological Materials Analysis

**Tuesday (9:15 AM) Room L504**
18SPECIAL01: Chemistry in Art and Archaeology Sponsored by the Society for Archaeological Sciences

**Tuesday (9:15 AM) Room A703**
18SPECIAL06: Past, Present and Future: Celebrating 60 Years of SAS and Spectroscopy Innovations

**Tuesday (1:30 PM) Room A703**
18SPECIAL07: Past, Present and Future: Celebrating 60 Years of SAS and Spectroscopy Innovations

**Wednesday (3:50 PM) Room L505**
18SPECIAL09: Novel Approaches to Biological Materials Analysis

**Thursday (9:15 AM) Room L506**
18SPECIAL02: Joint Pittcon/FACSS Session: Analysis of Microplastics II

**Thursday (1:30 PM) Room L508**
18SPECIAL05: Celebrating the FACSS Membership of CLIRSPEC

**SPSJ (ULTRAVIOLET SPECTROSCOPY), Room L507**

**Monday (9:15 AM)**
18SPSJ01: Frontiers of Vacuum, Far, and Deep-Ultraviolet Spectroscopy II

**Monday (1:30 PM)**
18SPSJ02: Frontiers of Vacuum-, Far-, and Deep-Ultraviolet Spectroscopy 2

**Monday (3:50 PM)**
18SPSJ04: Spectroscopic Analysis of Organic Semiconductor Thin Films

**Tuesday (9:15 AM)**
18SPSJ03: Near Infrared Spectroscopy

**Friday (8 AM) Room A703-704**
18SCIFRI01: The Science of Science Fiction
### PROGRAM HIGHLIGHTS

**SUNDAY**
- **8:00 am** SciX Bike Ride. Contact Greg Klunder for details - klunder1@llnl.gov
- **9 am-4 pm** Workshops
  - *Imperial A*
  - What’s Hot Vendor Presentations
- **4:50 pm** SciX 2018 Welcome. Mark Henson, SciX 2018 General Chair
- **Keynote Lecture: Matthew Savoca, Hopkins Marin Station, Stanford University**
- **7:15 pm** Welcome Mixer and SAS Sponsored Student Poster Session. SAS, Coblenz, and FACC Student Award Presentations, *Imperial B*

**MONDAY**
- **7:00 am** Coblenz Members Breakfast, *Room A702*
- **7:30 am** Wake up coffee, *Imperial Foyer*
  - *Imperial A*
- **7:45 am** Opening Address, Karen Esmonde-White, SciX 2018 Program Chair
- **8:00 am** International LIBS Plenary, Vincent Motto-Ros; Institut Lumière Matière, Université Lyon
- **8:30 am** 2018 Analyst Emerging Investigator Lectureship from the Royal Society of Chemistry Award Plenary, Wei Min; Columbia University
- **9:00 am-4:00 pm** Workshops
- **9:15-10:55 am** Oral Symposia
- **11:00 am-12:00 pm** Poster Session & Break, *Imperial B*
- **12:00 pm** Lunch on own
- **12:00-1:15 pm** Coblenz Speed Mentoring, *Room A602*
- **1:30-3:10 pm** Oral Symposia
- **3:10-3:50 pm** Poster Session & Break, *Imperial B*
- **3:50-5:30 pm** Oral Symposia
- **5:30-7:30 pm** Reception for Exhibit Opening (wine, beer, light hors d’oeuvres) Exhibit Hall (Atrium Ballroom)

**TUESDAY**
- **7:30 am** Wake up coffee, *Imperial Foyer*
  - *Imperial A*
- **7:45 am** Student Poster Awards (Monday posters)
- **8:00 am** FACSS Charles Mann Award for Applied Raman Spectroscopy Plenary, Andrew Whitley; HORIBA Scientific
- **8:30 am** Applied Spectroscopy William F. Meggers Award Plenary, S. Michael Angel, University of South Carolina
- **9:00 am-4:00 pm** Workshops
- **9:15-10:55 am** Oral Symposia
  - Exhibit Hall (Atrium Ballroom)
- **10:00 am-4:30 pm** Exhibits Open
- **11:00 am-12:00 pm** Poster Session & Break
- **11:40 am-1:10 pm** What’s Hot Vendor Presentations
  - Complimentary lunch in Exhibit Hall (ticket required)
  - **1:30-3:10 pm** Oral Symposia
  - **2:30 - 3:30 pm** Turn in raffle ticket for chance to win iPad
  - **3:10-3:50 pm** Poster Session & Break, raffle drawing
  - **3:50-5:30 pm** Oral Symposia
- **6:30 pm** Wednesday Evening Event, Conference, badge required. *Imperial B*

**WEDNESDAY**
- **7:30 am** Wake up coffee, *Imperial Foyer*
  - *Imperial A*
- **7:45 am** Student Poster Awards (Tuesday posters)
- **8:00 am** Spectroscopy’s Emerging Leader in Molecular Spectroscopy Award, Megan Thielges, Indiana University
- **8:30 am** AES Electrophoresis Mid-Career Award Plenary, Michael Roper, Florida State University
- **9:00 am-4:00 pm** Workshops
- **9:15-10:55 am** Oral Symposia
  - Exhibit Hall (Atrium Ballroom)
- **10:00 am-4:00 pm** Exhibits Open
- **11:00 am-12:00 pm** Poster Session & Break
- **11:40 am-1:10 pm** What’s Hot Vendor Presentations
- **12:00-12:30 pm** Complimentary lunch in Exhibit Hall (ticket required)
- **1:30-3:10 pm** Oral Symposia
- **2:30 - 3:30 pm** Turn in raffle ticket for chance to win iPad
- **3:10-3:50 pm** Poster Session & Break, raffle drawing
- **3:50-5:30 pm** Oral Symposia
- **6:30 pm** Complimentary dinner: Exhibit Hall (Atrium Ballroom)

**THURSDAY**
- **7:30 am** Wake up coffee, *Imperial Foyer*
  - *Imperial A*
- **7:45 am** Student Poster Awards (Wednesday posters)
- **8:00 am** ANACHEM Award Plenary, Susan Lunte; University of Kansas
- **8:30 am** Lester W. Stock Award Plenary, Javier Laserna; University of Málaga
- **9:15-10:55 am** Oral Symposia
- **11:00 am-12:00 pm** Poster Session & Break, *Imperial B*
- **12:00 pm** Lunch on own
- **1:30-3:10 pm** Oral Symposia
- **3:10-3:50 pm** Poster Session & Break, *Imperial B*
- **3:50-5:50 pm** Innovation Awards Plenary Session, *Imperial A*
  - FACSS Distinguished Service Award
  - FACSS Innovation Award Session
  - **7:30 am** Weekday Evening Event, Conference, badge required. *Imperial B*

**FRIDAY**
- **7:30 am** Room 703-704
- **7:30 am** Wake up coffee and pastries
- **7:45 am** Award Presentations: Student Poster Awards Innovation Award
- **8:00 am** The Science of Science Fiction
- **9:30 am** Preview of SciX 2019 in Palm Springs

*Next year: October 13 - 18, 2019, Palm Springs, CA*
TECHNICAL PROGRAM and EVENTS - SUNDAY
What's Hot Vendor Presentations, 4:50 – 6:00 PM Imperial A
Chair: Brian Dable, Arete Associates

4:50 PM  Modular Micro-Spectroscopy Solutions for High-Speed and High-Resolution Applications, Andor; Presenter: Justin Cooper
5:00 PM  Expanding the Process Capability of Process FTIR, Keit Spectrometers, Presenter: Dan Wood
5:20 PM  RPMC Lasers, Inc.
5:30 PM  CloudMinds's XI - A Sensitive Smart Handheld Raman with Cloud Data Platform and AI Deep Learning Algorithm for Mixture Analysis, CloudMinds, Presenter: Lynn Chandler
5:40 PM  Chase the Trace - See the New Raman Handheld by Anton Paar, Anton Paar USA, Presenter: Frederik Fleissner
5:50 PM  Improving Sample Throughput and Cost Efficiency of Laser Ablation Analysis Using the NWRauto, Elemental Scientific / Meinhard, Presenter: Rob Hutchinson

SUNDAY 6:15 PM - 7:15 PM Imperial A
18SUNKEY01: KEYNOTE LECTURE
Chair: Karen Esmonde-White

6:15 PM

(1) On Polymer Seas: The Rising Tide of Plastic in the Ocean and What to Do About It;

Matthew Savoca
Hopkins Marine Station, Stanford University

SUNDAY 7:15 PM – 9:00 PM, Imperial B
Welcome Reception and SAS Sponsored Student Poster Session
Student Award Presentations (FACSS, SAS, Coblentz, AES, Wiley)
8:00 AM (2) LIBS Imaging: A Breakthrough in Material and Biomedical Sciences?

Vincent Motto-Ros
Institut Lumière Matière, Université Lyon

8:30 AM (3) Analyst Emerging Investigator Lectureship from the Royal Society of Chemistry; Seeing Molecular Vibrations: Chemical Imaging for Biomedicine

Wei Min
Columbia University

**TECHNICAL PROGRAM - MONDAY**

**Award Presentations 7:45 am; Plenary Lectures 8:00 am, Imperial A**

**Chair: Garth Simpson**

**Next year: October 13 - 18, 2019, Palm Springs, CA**

---

**TECHNICAL PROGRAM - MONDAY**

**ORALS 9:15 - 10:55 AM**

**MONDAY 9:15 AM - 10:55 AM Room A706**

18ATOM05: Laser Ablation-Based Spectroscopy Techniques: Fundamentals and Applications

Chair: Jorge Pisonero

9:15 AM (9) FsLA/ICPMS: How Far Can We Go in Ultra Trace and Isotope Analysis? Application to Biocarbonate Dating; Christophe Pechevyan¹; Asmodée Galy¹; Fanny Claverie¹; Loïc Martin²; Chantal Trilibio²; Norbert Mercier³; ¹University of Pau - IPREM; ²University Bordeaux Montaigne - IRAMAT

9:35 AM (10) Evaluation of Fast and High Resolved Elemental Analysis Using LA-ICP-SFMS; Jorge Pisonero¹; Diego Bouzas¹; Heike Trub¹; Norbert Jakubowski²; Jose Manuel Costa¹; Nerea Bordel¹; Brunero Capella³; César Álvarez-Llamas¹; Silke Richter²; ¹University of Oviedo; ²Bundesanstalt für Materialforschung und -prüfung

9:55 AM (11) Chemical Imaging Using Tandem Femtosecond-LIBS and LA-ICP-MS; Jhanis J. Gonzalez¹,²; ¹Applied Spectra, Inc.; ²Lawrence Berkeley National Laboratory

10:15 AM (12) Short-Wavelength Photo-Ionization Mass Spectrometry (XUV-PIMS) to Overcome the “LOD vs. Space Resolution” Trade-Off; Davide Bleiner; Yunieski Arbelo; Matthias Trottmann; Empa - Federal Labs for Materials Science & Techn.

10:35 AM (13) Comparison of LA-ICP-MS and EPMA Testing of Historical Glasses; Ela Bakowska¹; Jared Singer²; Stephen Kuenzli³; Jerzy Kunicki-Goldfinger¹; Piotr Dzierzanowski²; ¹Corning RDC; ²Rensselaer Polytechnic Institute; ³University of Delaware

---

**MONDAY 9:15 AM - 11:15 AM Room L505**

18AWD11: 2018 Analyst Emerging Investigator Lectureship from the Royal Society of Chemistry Award Symposium Honoring Wei Min

Chair: Wei Min

9:15 AM (14) Why I Love Microdroplets; Richard Zare; Stanford University

9:55 AM (15) Using Raman to Assess Lipid Changes in Cancer Cells; Duncan Graham; Lauren Jamieson; Karen Faulds; University of Strathclyde

10:15 AM (16) Raman Imaging - the Solution for Unmet Needs in Neuropathology; Juergen Popp; Leibniz Institute of Photonic Technology

---

**MONDAY 9:15 AM - 10:55 AM Room L503**

18FORENS04: Forensic Analysis in the Lab and at the Crime Scene

Chair: Igor K. Lednev

9:15 AM (19) Forensic Science in the Lab and at the Crime Scene; Gregory Dutton; Gerry Laporte; National Institute of Justice

9:35 AM (20) Advancing Forensic Analysis with Spectroscopic Imaging; Sergei Kazarian; Imperial College London

9:55 AM (21) Field Sampling VOCs of Forensic Interest Using Capillary Microextraction of Volatiles (CMV); Jose Almirall; Michelle Torres; Florida International University

10:15 AM (22) Coupling of Thin Layer Chromatography to a Mid-Infrared Laser; Samuel P. Hernández-Rivera²; John R. Castro-Suarez³; Luis A. Pérez-Almodovar⁴; ¹University of Puerto Rico-Mayaguez; ²Fundacion Tecnologica Antonio de Arevalo, Tecnar-C

10:35 AM (23) Raman Spectroscopy for Body Fluid Identification; Marisia Fikiet; Igor Lednev; University at Albany, SUNY

---

**MONDAY 9:15 AM - 10:55 AM Room A707**

18IR10: 2D Correlation Spectroscopy I

Chair: Young Mee Jung

9:15 AM (24) Applications of Two-Trace Two-Dimensional (2T2D) Correlation spectroscopy; Isao Noda; University of Delaware

9:35 AM (25) Structural Changes of the Bread Aging Process: A Revised 2DCOS Analysis of Near-Infrared Spectroscopic Data; Heinz Siesler¹; Tine Ringsted¹; Soren Engelsen¹; Miriam Unger²; Brian Sobieski³; ¹University of Copenhagen; ²Anasys Instruments; ³University of Delaware, Materials Science; ⁴University of Duisburg-Essen, Physical Chemistry

9:55 AM (26) Use of Two-Dimensional Correlation Analysis for Selection of Key Features in Temperature-Varied Spectra to Improve Accuracy Discriminant Analysis; HoelI Chung; Kyeol Chang; Woosuk Solng; Hanyang University
10:15 AM (27) Analysis of Drug Dissolution Kinetics with Two-Dimensional Correlation Spectroscopy; Lei Geng; Chengxuan Guo; University of Iowa

10:35 AM (28) Comparability Assessment of Several Recombinant Proteins and Synthetic Polymers Using 2D IR and Co-distribution Correlation Spectroscopies; Belinda Passtrana; Protein Dynamic Solutions, LLC

MONDAY 9:15 AM - 10:55 AM Room A601
18LIBS01: Fundamentals
Chairs: Matthieu Baudelet, Francois Doucet

9:15 AM (29) Time-Resolved Dual-Comb Spectroscopy of Laser Induced Plasmas; R. Jason Jones; University of Arizona

9:35 AM (30) An Ideal Radiation Source for Plasma Spectroscopy Produced by Laser Ablation; Jörg Fögelmann1; David Grojol; Emanuel Axentes; Christoph Gerhardt1; Milos Burger1; Valentin Craciun2; 1Aix-Marseille University, CNRS, Marseille, France; 2NILPRP, Bucharest, Romania; 3Technical University Appl. Sci. Wildau, Germany; 4University of Belgrade

9:55 AM (31) Laser-Induced Breakdown Spectroscopy: Non-LTE electron distributions; Christian Parigier; University of Tennessee Space Institute

10:15 AM (32) Correction of Self-Absorption Effect in Calibration-Free Laser-Induced Breakdown Spectroscopy (CF-LIBS) by Blackbody Radiation Reference; Zhe Wang; Tianqi Li; Zongyu Hou; Tsinghua University

10:35 AM (33) Measuring the Ablated Mass in LIBS Plasmas with Atomic Absorption Spectroscopy; Jonathan Merten; Bruce Johnson; Arkansas State University

MONDAY 9:15 AM - 10:55 AM Room A704
18PMA03: New Frontiers in Chirality
Chair: Justin Neill

9:15 AM (34) Application of Raman Optical Activity Spectroscopy for Quality Assessment of Pharmaceuticals Products; Sergey Arzhantsyev; US FDA

9:35 AM (35) Exploiting Biocatalysis to Enhance Chiral Pharmaceutical Synthesis; Katherine Belecki1, 2; 1Virginia Commonwealth University; 2The Medicines for Pharmaceutical Synthesis

9:55 AM (36) HPLC Enantiomeric Separation of Aromatic Amines Using Crown Ether Tetracarboxylic Acid; Nelu Grinberg; Ling Wu; Shengli Ma; Sherry Shen; Mark Grinberg; Cristina Manolescu; Grinberg Consulting

10:15 AM (37) Understanding Reaction and Crystallization Kinetics Using Raman and IR as PAT Tools; Shengli Ma; Genetech Inc.

10:35 AM (38) Chiral Analysis of Pharmaceutical Products, Intermediates, and Impurities by Molecular Rotational Resonance Spectroscopy; Justin Neill; Matt Muckle; BrightSpec, Inc.

MONDAY 9:15 AM - 10:55 AM Room A703
18RAM01: Emerging Raman
Chairs: Pavel Matousek, Ian Lewis, Duncan Graham

9:15 AM (39) Relating Low Frequency Raman Spectra to Solar Cell Performance; Keith Gordon; University of Otago

9:35 AM (40) Dynamic Sparse Sampling in Hyperspectral Raman Imaging; Garth Simpson; Purdue University

9:55 AM (41) Advances in Spatial Heterodyne Raman and Laser Induced Breakdown Spectroscopy; Ashley Allen; S. Michael Angel; University of South Carolina

10:15 AM (42) Volumetric Chemical Imaging Through Stimulated Raman Projection; Ji-Xin Cheng; Boston University

10:35 AM (43) Depth Selectivity for in vivo Raman Spectroscopy Measurements of Epithelial Tissues; Anita Mahadevan-Jansen; Laura Masson; Christine O'Brien; Giju Thomas; Rekha Cautam; Vanderbilt University

MONDAY 9:15 AM - 10:55 AM Room L508
18RAM13: Raman Spectroscopy for Food Security
Chair: Roy Goodacre

9:15 AM (44) Lasers, Liquor and Bootlegs: Detecting Fake Spirits with Handheld SORS; David Ellis1, 2, 3; 1Manchester Institute of Biotechnology; 2School of Chemistry; 3University of Manchester

9:35 AM (45) SERS Analysis of Natural and Artificial Food Colorants; Lili He; Joshua Gukowsky; University of Massachusetts Amherst

9:55 AM (46) Portable Raman Approaches for Ensuring Food Authentication; Mei-Ling Shotts; The Ohio State University


10:35 AM (48) Rapid Screening Technique for the Detection of Adulteration of Herbs and Spices; Ian Robertson; Robert Packer; Peter Muller; Perkin Elmer

MONDAY 9:15 AM - 10:55 AM Room L506
18SPECIAL03: Joint Pittcon/FACSS Session: Analytical Techniques to Address Plastic Pollution
Chair: Matthew Savoca

9:15 AM (49) Exploring the Effects of Microplastics on Sediment Microbial Communities Based on 16S Amplicon Metagenomes; Meredith Evans Seeley1, 2; Robert Hale1, 2; Bongkuen Song1, 2; Virginia Institute of Marine Science; 1College of William & Mary

9:35 AM (50) Lost, but Found with Nile Red: A Novel Method to Detect and Quantify Small Microplastics (20 µM–1 Mm) in Environmental Samples; Gabriel Erni-Cassola1; Matthew L. Gibson1; Richard C. Thompson2; Joseph Christie-Oleza1; 1University of Warwick; 2Plymouth University

9:55 AM (51) Microplastic Pollution: IR Microscopy is Enhancing Chemical Identification; David Schiering1; Anthony Didomenico2; Debra Magadini2; Joaquim Goes2; 1Michigan State University; 2University of Alberta

10:15 AM (52) Using Raman Spectroscopy, Fluorescent Staining, and Density Separation to Identify Microfibers to Polymer Type; Xia Zhu; Brian Nguyen; Jie Bern You; Chelsea Rochman; University of Toronto

10:35 AM (53) When Worlds Collide: Microplastics from the Indoor to the Marine Environment; Robert Hale; Mark La Guardia; Kelley Uhlig; Meredith Evans; Drew Luellen; Virginia Institute of Marine Science

Next year: October 13 - 18, 2019, Palm Springs, CA
MONDAY 9:15 AM - 10:55 AM Room L504
18SPECIAL04: Tribute to the Life and Work of Theodore Rains
Chair: Connie Hayes
9:15 AM (54) Our History with Ted: From Graduate Students to Research Chemists and Beyond; Michael Epstein; Jerry Messman; National Institute of Standards and Technology
9:35 AM (55) Ted Rains: Setting the Standard; Gary Hieftje; Indiana University
9:55 AM (56) Standard Reference Materials: The Only “Sample” That Many of Us Know How to Run; R. Kenneth Marcus; Clemson University
10:15 AM (57) Dr. Ted Rains, Inspiration for Innovation: Pushing the Boundaries of LIBS Standard Manufacturing; Kelsey Cubertson; University of Charlerston
10:35 AM (58) Elemental Speciation at NIST: From Tetraalkyllead to Cyanocobalamin; Lee Yu; NIST
10:55 AM (59) A Summary of my Long and Varied Interactions with Ted Rains; Roy Koitryohann; University of Missouri

MONDAY 9:15 AM - 10:55 AM Room L507
18SPSJ01: Frontiers of Vacuum, Far, and Deep-Ultraviolet Spectroscopy II
Chair: Yukihiro Ozaki
9:15 AM (60) ATR Spectroscopy and Quantum Chemical Calculation Study of Electronic Spectra of Graphene in Far- and Deep-Ultraviolet Region; Yukihiro Ozaki1; Krzysztof Beć1; Yusuke Morisawa2; Ichiro Tanabe3; 1Kwansei Gakuin University; 2Kindai University; 3Osaka University
9:35 AM (61) Study for σ Orbital of N-Alkanes in the Liquid and Solid Phases Observed by Attenuated Total Reflectance Spectroscopy; Yusuke Morisawa; Kindai University
9:55 AM (62) Advantages of Surface Plasmon Resonance Sensors Using Far- and Deep-Ultraviolet Regions; Ichiro Tanabe; Osaka University
10:15 AM (63) Investigation of Changes in Electronic States of PEG/Alkali Metal Complex by ATR-FUV Spectroscopy; Nami Ueno; Tomonori Wakabayashi; Yusuke Morisawa; Kindai University
10:35 AM (64) Deep Ultraviolet Nonlinear Phase Dispersion Spectroscopy of Biomaterials; Soheil Soltani; Ashkan Ojaghi; Georgia Institute of Technology & Emory University

TECHNICAL PROGRAM - MONDAY
POSTERS SESSIONS & COFFEE BREAKS 11:00 AM - 12:00 PM & 3:10 - 3:50 PM, Imperial B
Set up Monday posters by 10:45 AM, remove at 3:50 PM

MONDAY 11:00 AM - 12:00 PM & 3:10 - 3:50 PM Imperial B
18MPAES Posters 1 - 29
AES Electrodephoresis

Poster Board #1
(65) 3D Printed LED-Induced Fluorescence Detection Array for Fourier Transform Capillary Electrophoresis; Laura Casto; Christopher Baker; University of Tennessee, Knoxville
Poster Board #2
(66) Carbon Tape as a Convenient Electrode Material for Electrochemical Paper-Based Microfluidic Devices (ePADs); Paige A. Reed2; Frederico J. V. Gomez1; George Chumanov1; Maria Fernanda Silva1; Carlos D. Garcia1; 1Instituto de Biología Agrícola de Mendoza; 2Clemson University
Poster Board #3
(67) Microchip Electrodephoresis Separation-Based Sensor for Continuous On-Line Monitoring of Catecholamines; Shamal Gunawardana1, 2; Susan Lunte1, 2, 3; Ralph Adams Institute for Bioanalytical Chemistry; 1University of Kansas; 2Department of Pharmaceutical Chemistry
Poster Board #4
(68) Development of a Novel Bipolar Electrochemistry Based Fluorescence Detector for Microchip Electrodephoresis; Manjula Wijesinghe; Susan Lunte; University of Kansas
Poster Board #5
(69) Preparing Dilute Small Volume Protein Samples with Electrophoretic Exclusion for Electron Microscopy Structural Determination; Fanyi Zhu; Brent Nannenga; Mark Hayes; Arizona State University
Poster Board #6
(70) Determination of Particle Trajectory in Streaming Dielectrophoresis; Rucha Natu; Rodrigo Martinez-Duarte; Clemson University
Poster Board #7
(71) Fabrication, Profiling and Modification of Silicon Nitride Based Planar and Nanoporous Sensors; Y.M. Nuwan D. Bandara; Buddini Karawdenniya; Jonathan Nichols; Robert Chevalier; Jason Dwyer; University of Rhode Island
Poster Board #8
(72) AC Electrokinetic Phenomena to Help with Electroanalysis: Detection of Ultra-Low Concentrations of Metal Nanoparticles and E. coli; Aliaksei Boika; Jason Bonezzi; Ariana Frkonja-Kuczin; The University of Akron, Dept. of Chemistry
Poster Board #9
(73) Label-Free Mouse Neural Stem Cell Sorting with Hydrodynamic Oblique Angle Parallel Electrode Sorter; Alan Jiang; Andrew Yale; Do-Hyun Lee; Estelle Kim; Abraham Lee; Tayloria Adams; Lisa Flanagan; University of California, Irvine
Poster Board #10
(74) Microalgae Protein Profiles as Environmental Monitors; Natalie Dunn; Frank Vogt; University of Tennessee
Poster Board #11
(75) Utilizing Fluorescent Capillary Electrophoresis & Dyes to Study the Hydrophobicity of Amyloid Beta; Haley Duncan; University of Arkansas
Poster Board #12
(76) Insulator-Based Dielectrophoresis to Purify and...
**TECHNICAL PROGRAM - MONDAY**

**POSTERS SESSIONS & COFFEE BREAKS 11:00 AM - 12:00 PM & 3:10 - 3:50 PM, Imperial B**

<table>
<thead>
<tr>
<th>Poster Board #13</th>
<th>(77) Particle Separation Using Dielectrophoresis Methodology</th>
<th>Enrich Bacteriophages: Adriana Coll De Pena; Julie Thomas; Nurul Humaira Mohd Redzuan; Blanca Lapizco-Encinas; Rochester Institute of Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poster Board #14</td>
<td>(78) Assessment of Correction Factors Employed in Insulator Based Dielectrophoresis</td>
<td>Poster Board #15</td>
</tr>
<tr>
<td>Poster Board #16</td>
<td>(80) A Microchip Electrophoresis-Based Probe of Macromolecular Binding Interactions</td>
<td>Poster Board #17</td>
</tr>
<tr>
<td>Poster Board #18</td>
<td>(81) A Mathematical Model to Extract Cell Properties from Dielectrophoretic Measurements</td>
<td>Poster Board #19</td>
</tr>
<tr>
<td>Poster Board #19</td>
<td>(83) Atmospheric Air Corona Induced DC Dielectrophoresis - a Novel Method of 3D Droplet Manipulation</td>
<td>Poster Board #20</td>
</tr>
<tr>
<td>Poster Board #21</td>
<td>(85) A Versatile Droplet Generator Using Electric Triggering for Serial Femtosecond Crystallography Application</td>
<td>Poster Board #22</td>
</tr>
<tr>
<td>Poster Board #22</td>
<td>(86) A Microfluidic Ratchet for Sub-Micrometer (bio)-Particle Separation</td>
<td>Poster Board #23</td>
</tr>
<tr>
<td>Poster Board #23</td>
<td>(87) Quantifying Chemotherapeutic Cytotoxicity Enhancement by Electropermeabilization Using 3D Biomimetic Microfluidic Device and Mathematical Model</td>
<td>Poster Board #24</td>
</tr>
<tr>
<td>Poster Board #24</td>
<td>(88) Single-Shot Micro-Fabrication of Multilayer Aligned Contactless Dielectrophoresis Devices by Imprinting</td>
<td>Poster Board #25</td>
</tr>
</tbody>
</table>

**MONDAY 11:00 AM - 12:00 PM & 3:10 - 3:50 PM Imperial B**

<table>
<thead>
<tr>
<th>Poster Board #26</th>
<th>(89) A Method for the Sustainable Synthesis of Carbon Fiber Using Dielectrophoresis of Bacteria and Pyrolysis</th>
<th>Poster Board #27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poster Board #27</td>
<td>(90) Microfluidic Dielectrophoretic Cytometry for Single-Cell Analysis to Quantify Phenotypic Heterogeneity</td>
<td>Poster Board #28</td>
</tr>
<tr>
<td>Poster Board #28</td>
<td>(91) Preparing Dilute Small Volume Protein Samples with Electrophoretic Exclusion for Electron Microscopy Structural Determination</td>
<td>Poster Board #29</td>
</tr>
<tr>
<td>Poster Board #29</td>
<td>(92) Microchip Isotachophoresis for Isolation of Biomarker-Bearing Extracellular Vesicles</td>
<td>Poster Board #30</td>
</tr>
<tr>
<td>Poster Board #30</td>
<td>(93) Dielectrophoresis to Concentrate Trypanosoma brucei</td>
<td>Poster Board #31</td>
</tr>
<tr>
<td>Poster Board #31</td>
<td>(94) Decrease in Bone Mechanical Properties after Exposure to Mixed Fields Of Fast Neutrons and Extremely Low Frequency Electromagnetic Field</td>
<td>Poster Board #32</td>
</tr>
<tr>
<td>Poster Board #32</td>
<td>(95) Comparsion of the Function of Ni Transporter IREG2 in Ni Hyperaccumulators of Noccaea Caerulescens and Noccaea Japonica</td>
<td>Poster Board #33</td>
</tr>
<tr>
<td>Poster Board #33</td>
<td>(96) Next Generation Dentistry – Repairing the Tooth</td>
<td>Poster Board #34</td>
</tr>
<tr>
<td>Poster Board #34</td>
<td>(97) Studies on the Toxicity of Novel Spirocyclic Compounds and Ionic Liquids Designed for Cellulose or Biomass Processing</td>
<td>Poster Board #35</td>
</tr>
<tr>
<td>Poster Board #35</td>
<td>(98) Smart Fluorescent Probes for Sensitive Detection of Cell-Free DNA Mutations</td>
<td>Poster Board #36</td>
</tr>
<tr>
<td>Poster Board #36</td>
<td>(99) Si Traceable Quantification of Hemoglobin Using</td>
<td>Poster Board #37</td>
</tr>
</tbody>
</table>

Next year: October 13 - 18, 2019, Palm Springs, CA
an ID-SERS Active Immunoassay; Sarah Schmidt; Claudia Frank; Stefan Wundrack; Rainer Stosch; Physikalisch-Technische Bundesanstalt

Poster Board #36

(100) Metabolomics Analysis of Human Serum for Population Based Characterisation of Agein in Men from Different Ethnicities; Dakshat Trivedi1; 2; Roy Goodacre1; 2; 1Manchester Institute of Biotechnology; 2University of Manchester

Poster Board #37

(101) Combined Fingerprint and High Wavenumber Raman Spectroscopy for in vivo Assessment of the Pregnant Cervix; Laura Masson1; Christine O'Brien2; Jennifer Herington3; Jeff Reese3; Ton van Leeuwen4; Anita Mahadevan-Jansen1; 1Vanderbilt University; 2Washington University in St. Louis; 1Vanderbilt University Medical Center; 4University of Amsterdam Medical Center

Poster Board #38

(102) Assessment of Sequentially Demineralized Cortical Bone by Mid and Near Infrared Spectroscopy to Quantify Mineralization; Ramyasri Ailavajihala; William Querido; Sakina Bookbinder; Nancy Pleshko; Temple University

Poster Board #39

(103) Non-Invasive Chemical Sensing through Tissue with X-Rays; Jeffrey Anker; Md Arifuzzaman; Paul Millhouse; Sachindra Kiridena; Uthpala Wijayaratna; Yash Raval; Caleb Behrend3; John DesJardins1; Jeremy Tzeng3; 1CMUXE, Purdue University

Poster Board #40

(104) Synergy of Cold Atmospheric Plasma and Electroporation: A Temporal Study of Cell Death Signaling Responses in Human Cancer Cells; Prasoon Diwakar; Danielle Krug; Ahmed Hassanein; 1CMUXE, Purdue University

Poster Board #41

(105) Novel Electrophilic Scaffold for Imaging of Essential Penicillin-Binding Proteins in Streptococcus pneumoniae; Shubham ShariFazadeh1; Michael Boersma2; Ozden Kocaoğlu2; Alireza Shoikhi3; Clayton Brown4; Joshua Shirley4; Malcolm Winkler5; Erin Carlson1; 1University of Minnesota; 2University of South Carolina Upstate; 3University of Michigan; 3University of South Carolina; 4University of Georgia; 5University of Minnesota

Poster Board #42

(106) Glycophosphat Mediated Disruption on Lipid Organization of Stratum Corneum Skin Model; Tibebe Lemma; Mateus D. Maximino; Osvaldo N Oliveira Jr; Carlos J.L. Constantino; Universidade de Sao Paolo

Poster Board #43

(107) Biosorption of Dyes by Using Litchi Chinensis as Bisorbent; Humaira Rehman; CCL Pharmaceuticals Pvt.Ltd

Poster Board #44

Withdrawn

Poster Board #45

(108) Raman and FTIR Spectroscopic Measures of Crystallinity Differentially Assess Crystal Size and Stoichiometric Perfection in Hydroxyapatite; Cassidy Milet; Erik Taylor; Eve Donnelly; Cornell University

Poster Board #46

(109) Separation of Selenoproteins in Mouse Liver and Plasma by Two Dimensional Gel Electrophoresis; Kazuhiro Suzuki; Tomohiro Ikeda; Naoki Furuta; Chuo University

Poster Board #47

(110) Deep Tooth Analysis and Study of the Abundance Variations of Some Minerals by LIBS (Laser Induced Breakdown Spectroscopy); Riham Nour; Sami Hamzaoui; Nejm Eddine Jaidene; Laboratory of Molecular Atomic Spectroscopy and Ap

Poster Board #48

(111) Comparing Acute-Phase Serum Lipid Alterations between Mild and Moderate Traumatic Brain Injury; Scott Hogan; Eric Gaupp; Kyle Milligan; Michelle LaPlaca; Facundo Fernandez; 1Georgia Institute of Technology

Poster Board #49

(112) Spectroscopic Analysis of Decellularized Porcine Trachea for Tissue Engineering; Jessica M Falcon1; Marian Ghrabi2; Ahmed Soliman3; Nancy Pleshko; Temple University

Poster Board #50

(113) Non-Destructive Quantification of Tissue Engineered Cartilage Components Using Near Infrared Diffuse Reflectance Spectroscopy; Shtitl Kandel; Daniel J. Reiners; Manuel Portilla-Jimenez; Nancy Pleshko; Temple University

Poster Board #51

(114) Detection of Circulating Tumor DNA by Sanger Sequencing via Elimination of Wild-Type DNA with an Artificial Sequence-Specific Endonuclease; Wei Chen; College of Chemistry and Molecular Engineering

Poster Board #52

(115) Integrating Membranes into 3D-Printed Devices for Enhanced Bioanalytical Measurements; Cody Pinger; Andre Castiaux; Dana Spence; Michigan State University

Poster Board #53

(116) A Simple System for Generating, Trapping and Detecting Volatile Thiols; David Thompson; Anselm Omoike; University of South Carolina Upstate

Poster Board #54

(117) Cross-Linked Chitosan-Coated Magnetic Iron Oxide Nanoparticles with Tannic Acid Modification for the Controlled Release of Curcumin; D. Tony Ren; Shunsuke Kashiwakura; Institute for Materials Research Tohoku University

Poster Board #47

(118) The Application of Short-And-Long Colinear Laser-Induced Breakdown Spectroscopy

Poster Board #55

(119) Timing Effects on CO2-Enhancement of Uranium Plasma; Codjo Akpovo1; Luisa Profeta2; Lewis Johnson1; 1Florida A&M University; 2Alakai Defense Systems

Poster Board #56

(120) Metal Scrap Classification Based on Spectral Images of the Concatenated Peak Patterns from Laser-Induced Breakdown Spectroscopy; Ekta Srivastava; Euisook Hwang; Sungho Shin; Sungho Jeong; 1Gwangju Institute of Science and Technology
TECHNICAL PROGRAM - MONDAY
POSTERS SESSIONS & COFFEE BREAKS 11:00 AM - 12:00 PM & 3:10 - 3:50 PM, Imperial B

Poster Board #58
122 Study of Laser Induced Plasma Obtained in Air and Argon Atmosphere; Awadhesh Kumar Rai; Pravin Kumar Tiwari; University of Allahabad

Poster Board #59
123 Quantitative Analysis of Trace Elements in Steel Using a Portable FO-LIBS System; Qiaodong Zeng1, 2; Huaqing Yu; Boyun Wang; Yongjian Xiao; Liangbo Guo; Xiangyou Li; Hubei Engineering University; 2Huzhong University of Science and Technology

Poster Board #60
124 LIBS Online Application in the Aluminum Industry; Lanxiang Sun1, 2, 3; Peng Zhang1, 2; Haibin Yu1, 2, 3; Shenyang Institute of Automation, Chinese Academy; 2University of Chinese Academy of Sciences; 3CAS Key Laboratory of Networked Control Systems

Poster Board #61
125 Study of Long-Short DP-LIBS on the Measurement of Steel Samples at Different Temperatures; Minchao Cui1, 2; Yoshihiro Deguchi2; Zhenzhen Wang1; Shengdun Zhao1; Seiya Tanaka2; Xi'an Jiaotong University; 2Tokushima University

Poster Board #62
126 Laser Induced Breakdown Spectroscopy for in situ Analysis and Defects Detection during Metal Parts Production by Additive Manufacturing; Pavel Sdvizhenskii1, 2; Vasilyi Lednev1, 2; Roman Tretyakov3; Michael Grishin1, 2; Roman Asytn1; Michael Davydov1; Alexander Fedorov1; Sergey Pershin1, 2; Prokhorov General Physics Institute, RAS; 2UST MISiS; 3Bauman Moscow State Technical University; 4Moscow Institute of Physics and Technology

Poster Board #63
127 High-Temperature Laser Induced Breakdown Spectroscopy; Mikhail Grishin1, 2; Vasilyi Lednev1, 2; Pavel Sdvizhenskii1, 2; Roman Asytn1; Roman Tretyakov3; Michael Davydov1; Alexander Fedorov1; Sergey Pershin1, 2; Prokhorov General Physics Institute, RAS; 2UST MISiS; 3Bauman Moscow State Technical University; 4Moscow Institute of Physics and Technology

Poster Board #64
128 Temporal Evaluation and Imaging of Laser-Induced Plasmas on Cement-Based Materials; Cassian Gottlieb1, 2; Gerd Wilsch1; Igor Gornushkin1; Ardan Gojani1; 2Bundesanstalt für Materialforschung und -prüfung; 2Secopta analytics GmbH

Poster Board #65
129 High Resolution Mapping of Cutaneous Melanoma by UV-Femtosecond Laser-Induced Breakdown Spectroscopy; Jane-Hee Choi; Youngmin Moon; Junghyun Han; Sungho Jeong; 1Gwangju Institute of Science and Technology

Poster Board #66
130 Analysis of Uranium Concentration in Electrorefining Process Salt Using LIBS; Se-Hwan Park; Seul-Ki Han; Seong-Kyu Ahn; 2Korea Atomic Energy Research Institute

Poster Board #67
131 Modeling of Plasma Decay for Tightly Focused Femtosecond Laser Pulses in Air; Alexey Ilvin1, 2; Sergey Golik1, 2; Konstantin Shmirko1, 2; 1Far Eastern Federal University; 2Institute of Automation and Control Processes

Poster Board #68
132 Selective LA-LIF of Arsenic, Carbon and Platinum with a Tunable, Line-Narrowed Argon Fluoride Laser; Jonathan Merren; Patrick Tribbett; Chris Jones; Anna Anders; 1Arkansas State University

Poster Board #69
133 Evolution of Pressure in a Plasma Produced by Laser Ablation of Steel; Jörg Hermann1; Emanuel Axente2; Valentín Craciun3; Aya Taleb1, 2; Frédéric Pelascini; 1Aix-Marseille University, CNRS, Marseille, France; 2NILPRP, Bucharest, Romania; 3CRITT Matériaux Alsace, Schiltigheim, France

Poster Board #70
134 Local Thermodynamic Equilibrium in a Laser-Induced Plasma Demonstrated by Blackbody Radiation; Jörg Hermann1; David Grojo1; Emanuel Axente2; Valentín Craciun3; 1Aix-Marseille University, CNRS, Marseille, France; 2NILPRP, Bucharest, Romania

Poster Board #71
135 Kinetic Model to Understand Cluster Formation Reaction in Underwater LIBS Plasma; Tetsuo Sakka; Koki Kimura; Ken-Ichi Amano; Naoya Nishi; 1Kyoto University

Poster Board #72
136 Tailored Ultrafast Laser-Induced Plasmas; Vassilia Zorba1; Yonghoo Lee1, 2; Xianglei Mao2; George Chan3; Jianis Gonzalez1, 2; Rick Russo; 1Lawrence Berkeley National Laboratory; 2Mokpo National University

Poster Board #73
137 Effect of Laser Focusing Geometry on Single- and Double-Pulse Laser-Induced Breakdown Spectroscopy Underwater; Ye Tian; Boyang Xue; Lintao Wang; Yuan Li; Ying Li; Ronger Zheng; Ocean University of China

Poster Board #74
138 Plasma Evolution Studies Using Time and Space Resolved Laser Induced Breakdown Spectroscopy; Eshita Mal1; Rajendhar Junjuri2; Manoj Gundawar2; Alika Khare1; 1IIT Guwahati, Guwahati; 2Applied Research Associates; 4University of Tennessee Space Institute

Poster Board #75
139 Investigation on the Dynamic Characteristics of LIBS for Heavy Metal Elements in Liquid Matrix; Guanxian Yao; Chen Li; Chao Yang; Xinyan Yang; Zhengbo Qin; Xianfeng Zheng; Zhifeng Cui; 1Anhui Normal University

Poster Board #76
140 Mid-IR Ablation of Titanium and Aluminum: Spectroscopy and Crater Morphology; Todd Van Woerkom1; Glen Perram1; Christian Parigger2; Brian Dolasinski3; Charles Phelps3; Patrick Berry4; 1Air Force Institute of Technology; 2Air Force Research Laboratory; 3Mokpo National University; 4University of Tennessee Space Institute

Poster Board #77
141 Phase Separation of Heterogenous Materials Using Laser-Induced Breakdown Spectroscopy and Clustering; Tobias Joachum; Cassian Gottlieb; Gerd Wilsch1; 1Secopta analytics GmbH; 2Bundesanstalt für Materialforschung und -prüfung

Poster Board #78
142 Quantitative Analysis of Hair Minerals by the LIBS Technology (Laser Induced Breakdown
**POSTERS SESSIONS & COFFEE BREAKS 11:00 AM - 12:00 PM & 3:10 - 3:50 PM, Imperial B**

**Monday, October 14, 2019**

**Poster Board #79**

(143) **Metal Particle Detection in Lubricating Oils Using Laser-Induced Breakdown Spectroscopy**; Benjamin Gorr, Waruna Kulatlilaka, Texas A&M University

**Poster Board #80**

(144) **Measuring the Lithium in an Aluminum LIP with Atomic Absorption Imaging**; Jonathan Merten, Arkansas State University

**Poster Board #81**

(145) **Analysis of Carcinogen in Products Containing High-Levels of Nicotine Using Laser Induced Breakdown Spectroscopy**; Emily Orme, Melissa Fernandez, Sarah Wagner, Nathalie Manzano, Theodore Caplow, Prasoon Diwakar, Frost Science Museum, Florida International University, Grayscale Partners, Purdue University/South Dakota School of Mines

**Poster Board #82**

(146) **Analysis of Complex Emission Spectra From Samples Containing Carcinogen Using Laser Induced Breakdown Spectroscopy**; Melissa Fernandez, Sarah Wagner, Emily Orme, Nathalie Manzano, Theodore Caplow, Prasoon Diwakar, Frost Science Museum, Florida International University, Grayscale Partners, Purdue University/South Dakota School of Mines

**Poster Board #83**

(147) **Exploration of Ambient Gas Effects on Laser Induced Breakdown Spectroscopy for Carcinogen Detection**; Sarah Wagner, Melissa Fernandez, Emily Orme, Nathalie Manzano, Theodore Caplow, Prasoon Diwakar, Frost Science Museum, Florida International University, Grayscale Partners, Purdue University/South Dakota School of Mines

**Poster Board #84**

(148) **Validation of ATR Correction and Reverse ATR Correction Algorithms, Improved by Optimized Corrections**; Farrel Borden, Gregory M. Bank, Michelle D'Souza, Keith Kutnisky, Robin O'Connor, Bio-Rad Laboratories, Inc., Informatics Division

**Poster Board #85**

(149) **Fiber Solutions for Multi-Spectral Process Control – from R&D to IoT-Sensors**; Viacheslav Artvyshenko, art photonics GmbH

**Poster Board #86**


**Poster Board #87**

(151) **Optical Constants n and k of Uranium-Bearing Minerals Obtained via Single-Angle Reflectance Spectroscopy**; Brent Devetter, Tanya Myers, Brett Cannon, Nicole Scharko, Yin-Fong Su, Russell Tonkyn, Jordan Corbey, C. Tom Resch, Timothy Johnson, Pacific Northwest National Laboratory

**Poster Board #88**

(152) **Stoichiometric Analysis of Competing Intermolecular Hydrogen Bonds Using Infrared Spectroscopy**; Young Jong Lee, Ian S. Ryu, Xiaohui Liu, Ying Jin, Jirun Sun, NIST, American Dental Association

**Poster Board #89**

(153) **A Universally Applicable Spectroscopic Model for Reagent-free Polyol Hydroxyl Number Determination**; Adam Hopkins, Metrohm USA

**Poster Board #90**

(154) **What Comes Off Before It Explodes: Headspace Gas Composition Measurements from Heated Explosives**; Greg Klunder, Nicholas Muetterties, Paul Spackman, Evan Kahl, Peter Hsu, Lawrence Livermore National Laboratory

**Poster Board #91**

(155) **Surface Micro-Patterning for Elimination of Interference Fringes in IR Spectra of Samples Prepared with a Diamond Anvil Cell**; Barry Havens, PPG

**Poster Board #92**

(156) **Spectrophotometer Sensitive to Complex Refractive Index**; Romuald Pawluczyk, Karl Sampara, Mang Li, CME telemetrix inc.

**Poster Board #93**

(157) **Influence of Deformation, Cross-Linking Density, and Curing Temperature on the Ultrafast Structural Dynamics of Polydimethylsiloxane Thin Films by 2D-IR Spectroscopy**; Courtney Olson, Aaron Massari, University of Minnesota

**Poster Board #95**

(158) **Determination of Acid End Group in Polybutylene Terephalate (PBT) using Fourier Transform Near-Infrared (FT-NIR) Spectroscopy and Chemometrics**; Yusuf Sulub, SABIC

**Poster Board #96**

(159) **Ultrasound-Assisted Spectroscopy for Pretreatment-Free Analysis**; Takuya Kambayashi, Toshimitsu Noguchi, Shunsuke Kono, Akhiro Nojima, Hitachi, Ltd. Research & Development Group

**Poster Board #97**

(160) **Stoichiometric Analysis of Competing Intermolecular Hydrogen Bonds Using Infrared Spectroscopy**; Ian Seungwan Ryu, Xiaohui Liu, Ying Jin, Jirun Sun, Young Jong Lee, National Institute of Standards and Technology, American Dental Association Foundation

**Poster Board #98**

(161) **An Infrared Study of PCET and Redox-Active Tyrosine YZ in the Photosynthetic Oxygen Evolving Center**; Jiayuan He, Zhanjun Guo, Bridgette Barry, Georgia Institute of Technology

**Poster Board #99**

(162) **Discrimination between Clean Banana and Pesticide Spiked Banana Using Fourier Transform Infrared Spectrometry and Chemometrics**; Oluwatobi Fabunmi, Huggins Z. Msimanga, Christopher R. Dockery, Kennesaw State University

**Poster Board #100**

(163) **Development of SPR-NIR Spectroscopy for Highly Diluted Solutions in a Nano Litter Scale**; Kodai Miyamoto, Takuma Genkawa, Ichiro Tanabe, Aiko Miyamoto, Yuki Hanase, Fumie Watanabe, Nobuhiro

Next year: October 13 - 18, 2019, Palm Springs, CA
TECHNICAL PROGRAM - MONDAY
POSTERS SESSIONS & COFFEE BREAKS 11:00 AM - 12:00 PM & 3:10 - 3:50 PM, Imperial B

Poster Board #101

(164) Determination of Degree of Cure of Acrylate Coating with Fourier Transform Infrared Spectroscopy; Bing Zhou; David Clinnin; Roger Hurst; SABIC

Poster Board #102

(165) A Quantitative and Non-Destructive Monitoring Method for the Number of Amide Bonds in a Peptide Chemosynthetic Model by NIR Spectroscopy; Atsushi Ito; Jun-Ichi Ogawa; Kodai Murayama; Yuki Hanase; Mika Ishigaki; Shinichiro Fuse; Shun-ichi Miyazaki; Hiroyuki Nakamura; Hitoshi Sato; Yukihiro Ozaki; Yokogawa Electric Corporation; University of Tsukuba; Osaka University; Tokyo Institute of Technology

Poster Board #103

(166) Another Diamond Anniversary – Diamond Optics for Infrared Spectroscopy Applications; David Schiering; John Reffner; Czitek; John Jay College, CUNY

TECHNICAL PROGRAM - MONDAY
ORALS 1:30 - 3:10 PM

MONDAY 1:30 PM - 3:10 PM Room A706
18ATOM01: Low Pressure Glow Discharge Spectroscopy: Fundamentals and Applications
Chair: Jorge Pisonero

1:30 PM (171) Volatile Organic Compounds Analysis by Pulsed Glow Discharge Time of Flight Mass Spectrometry; Nerea Bordel; Jonatan Fandino; Marcos Bouza; Alfredo Sanz-Medel; Jorge Pisonero; University of Oviedo; Georgia Institute of Technology; University of Oviedo

1:50 PM (172) Impact of Discharge Parameter on Elemental Quantification; Gagan Paudel; Marisa Di Sabatino; NTNU

2:10 PM (173) Compositional Depth Profile Analysis by Radio Frequency Glow Discharge Utilizing a Solid-State Spectrometer; Kim Marshall; LECO Corporation

2:50 PM (174) Industrial Applications of RF GD-OES; Matthieu Chausseau; Philippe Hunault; Kayvon Savadkouei; Patrick Chapon; Sofia Gaiaschi; HORIBA Scientific; USA; HORIBA Scientific, France

2:50 PM (175) Individually Addressable Linear Restrictive Anode Array Masks for Glow Discharge Optical Emission Spectroscopy Elemental Mapping; Gerardo Gamez; Texas Tech University

MONDAY 1:30 PM - 3:10 PM Room L506
18BIM02: Translation and Commercialization of Analytical Technologies

1:30 PM (180) MEMS Spectral Sensors Enabling Ubiquitous Spectra Sensing; Scott Smyser; Si-Ware Systems

1:50 PM (181) QCL-Based Spectrometer for Liquid Analysis; Bob Shing; Miles Weida; Bill De Costa; Jeremy Rowlette; DRS Daylight Solutions

2:10 PM (182) The Commitment Required to Take New Technology from Idea to Successful Product: An Atomic Story; C. Derrick Quarles Jr.; Daniel R. Wiederin; Elemental Scientific, Inc.

2:30 PM (183) Low Frequency/THz-Raman: from the Breadboard to Industrial Process Solution; James Carriere; Frank Havermeyer; Lawrence Ho; Anjan Roy; Randy Heyler; Ondax, Inc.

2:50 PM (184) Solid Phase Extraction: A Century of Development to Tackle Increasing Application Challenges; Maura Rury; Horizon Technology
MONDAY 1:30 PM - 3:10 PM Room A704
18IR11: 2D Correlation Spectroscopy II
Chair: Young Mee Jung

1:30 PM (185) Potential of Smooth Factor Analysis (SFA) for Denoising Effect: Young Mee Jung1; Isao Noda2; Yeonju Park3; Kangwon National University; 2University of Delaware

1:50 PM (186) PCMW2D Correlation Analysis of Temperature-Dependent IR Spectra of Poly(4-vinyl phenol); Shigeki Morita1; Osaka Electro-Communication University

2:10 PM (187) 2D-COS Analysis of Highly Spatially Resolved IR Spectra Collected Using a New Non-Contact Optical Method; Curtis Marcott1, 2; Isao Noda3; Sergey Zayats3; Kevin Kjoller4; Light Light Solutions; 2University of Delaware; 3Anasys Instruments; 4Photothermal Spectroscopy Corp

2:30 PM (188) Use of 2D COS Algorithms to Spectra of Polyethylene Terephthalate Fibers Undergoing Changes in Orientation and Crystallinity to Separate Changes Due to Conformation vs. Crystallization; Fran Adar; HORIBA Scientific

2:50 PM (189) Probing Bloodstream Aging with Raman Spectroscopy: 2DCoS Analysis; Igor Lednev1; Young Mee Jung2; Yeonju Park2; Isao Noda3; Kyle Doty1; University at Albany, SUNY; Kangwon National University; University of Delaware

MONDAY 1:30 PM - 3:10 PM Room A601
18L1BS07: LIBS 2018 - Industrial Automation
Chairs: Matthieu Baudelet, Francois Doucet

1:30 PM (190) LIBS and Machine Learning: An Emerging Tool for Industry 4.0; Francois Doucet; Lutfi Ozcan; Kheireddine Rifai; ELEMISSION Inc.

1:50 PM (191) Study on a Classification Method Based on HOG Features of Laser-Induced Breakdown Spectral Image; Juijiang Yan; Ping Yang; Zhongqi Hao; Ran Zhou; Wanting Li; Wen Zhang; Kun Liu; Peiyuan Gao; Xiangyou Li; Xiaoyan Zeng; Huazhong University of Science and Technology

2:10 PM (192) Pre-Clustering Based Regression for Soft classification of Metal Scraps from Laser-Induced Breakdown Spectroscopy; Fuisook Hwang; Eden Kim; Sungho Shin; Sungho Jeong; Gwangju Institute of Science and Technology

2:30 PM (193) Detection of Dissolved Oxygen in Heavily Doped Silicon Crystals Using Laser Induced Breakdown Spectroscopy (LIBS); Dibendu Mukherjee1; Patrick, A. Taylor2; Robert W. Standlee3; Ali Davari1; University of Tennessee; ChemTrace Quantum Global Technologies; GlobalWafers Co. Ltd.; University of California, Davis

2:50 PM (194) LIBS for Industrial Diagnostics and Quality Control in Industrial Processes; Vincenzo Palleschi1, 2; Stefano Legnaoli1, 2; Giulia Lorenzetti1, 2; Beatrice Campanella1, 2; Stefano Pagnotta1, 2; Francesco Poggialini1, 2; Asia Botti1, 2; Mohamed Abdel Harith1; Institute of Chemistry of Organometallic Compounds; National Research Council; National Institute for Laser-Enhanced Science
2:10 PM (207) Application of SERS-Based Bioassay for the Point-of-Care Diagnostics of Infectious Diseases; Jaebum Choo; See Hi Lee; Hanyang University

2:30 PM (208) Functional Analysis of Industrially and Clinically Relevant Microbes in Mixed Microbial Communities Using SERS and Stable Isotopic Labeling; Malama Chisanga; Howbeer Muhadzal; Richards Kimber; Roy Goodacre; University of Manchester

2:50 PM (209) SERS of Self-Assembled Multi-Layered Vertically Aligned Au NR Arrays; Li-Lin Tay; Sarah Miliken; John Hulse; Jeff Fraser; Shawn Poirier; Ali Ghaemi; National Research Council Canada

MONDAY 1:30 PM - 3:10 PM Room A703
18RAM12: Structural Characterization with Low Frequency Raman
Chair: James Carriere18B1M02, Anjan Roy

1:30 PM (210) Applying Low Frequency Raman to QbD in Pharmaceutical Development; John Wasylyk; Steven Wisniewski; Ming Huang; Robert Wethman; Bristol-Myers Squibb Co.

1:50 PM (211) Low-Frequency Raman for Characterization of Transdermal Delivery Systems; Daniel Willett; Jason Rodriguez; Anna Wokovich; Food and Drug Administration

2:10 PM (212) Lattice Vibrations and Polymorph Transformation Mechanisms in Thermosalient Crystals; Timothy Korter; Adam Zaczek; Syracuse University

2:30 PM (213) Ultramicro-Exploring Pharmaceutical Co-crystals by Using Nano-Spot Method Coupled with Low-Frequency Raman Spectroscopy; Yusuke Maeno1; Yuta Tanabe2; Hiroshi Hisada2; Motoki Inoue2; Toshiro Fukumi2; Nissan Chemical Industries, Ltd.; Meiji Pharmaceutical University

2:50 PM (214) Probing the Connection between Low-Frequency Vibrational Modes and Macroscopic Structural Behavior of Metal Organic Frameworks; Neal Kline1; Bernard Goetz2; Chase Ellis3; Ashish Tripathi3; Christian Serre2; Jose L. Mendoza-Cortes4; Research and Technology Directorate, Edgewood Chem; Institut des Materiaux Portland, CNRS Ecole; U.S. Naval Research Laboratory; Florida State University

MONDAY 1:30 PM - 3:10 PM Room L507
18SPR06: New Science and Applications for Plasmonic Nanoparticles and Substrates
Chair: Wei-Chuan Shih

1:30 PM (220) Application of Holographic Plasmonic in Biosensing; Alexandre Drol1; Nathan Linquist1; University of Victoria; Bethel University, Department of Physics and Eng.

1:50 PM (221) Nanoparticle-mediated Photothermal Approach to Treatment of Biofilm Infections; Jingyi Chen; University of Arkansas

2:10 PM (222) Hybrid Plasmonic-Dielectric Nonlinear Metasurfaces; Hayk Harutyunyan; Emory University

2:30 PM (223) Computational and Experimental Investigation of Localized Surface Plasmon-Enhanced Circular Dichroism; Lin He; Drexel University

2:50 PM (224) 3D Plasmonic Nanoarchitectures for Extreme Light Concentration; Wei-Chuan Shih; University of Houston

MONDAY 1:30 PM - 3:10 PM Room L503
18SPECIAL08: Novel Approaches to Biological Materials Analysis
Chair: Karen Esmonde-White, Jeremy Shaver

1:30 PM (215) Implantable Fluidic Sensor for Passive Radiographic Monitoring of Tibial Plate Strain; Aneska Rajamurthi1; Md Arifuzzaman2; Paul Millhouse3; Thomas Pacey2; John DesJardins2; Caleb Behrend2; Jeffrey Anker1,2,4; Clemson University; Greenville Health Systems; Center for Optical Materials Science & Engineering

1:50 PM (216) Real Time High Pressure Optical Spectroscopy in Biochemical Studies: Pressure Perturbation of pH Enzymatic Activity; Gary Smejkal; Alana Murphy; Vera Gross; Nicole Cutri; Alexander Lazarev; Pressure Biosciences

2:10 PM (217) Analysis of Dried Mushrooms by Molecular (FTIR, Raman) and Atomic Spectrometry; Jerzy Mierzwa; 2Tennessee State University

2:30 PM (218) Collagen Formation during Healing of Subcritical Calvarial Defects Related to Bone Microstructure; Rafay Ahmed; Condon Lau; City University of Hong Kong

2:50 PM (219) Characterization of Antibodies through Novel Assay Data Analysis and Machine Learning Methods; Jeremy M. Shaver; Titieli Amimeur; Randal R. Ketchum; Just Biotherapeutics

Next year: October 13 - 18, 2019, Palm Springs, CA
3:50 PM (230) 3D Printed Microfluidic Devices for Capillary Electrophoresis of Pre-Term Birth Biomarkers; Michael J. Beauchamp; Anna V. Nielsen; Hua Gong; Ellen K. Parker; Haifa Almughamsi; Gregory P. Nordin; Adam T. Woolley; Brigham Young University

4:10 PM (231) Chemically Tuned Nanopore Sensor Platforms for Single-Molecule Sensing; Jason Dwyer; Y.M. Nuwan Bandara; Buddini Karawdeniya; Jonathan Nichols; Robert Chevalier; University of Rhode Island

4:30 PM (232) Electrically Driven Sample Preparation and Analysis in Microfluidic Devices; Adam Woolley; Ellen Parker; Haifa Almughamsi; Anna Nielsen; Jacob Nielsen; Michael Beauchamp; Mukul Sonker; Brigham Young University

4:50 PM (233) Utilizing Dyelectrophoresis to Probe the Biophysical Differences of Listeria monocytogenes Serovars; Claire V. Crowther; Shannon H. Hilton; Rensselaer Polytechnic Institute; Arizona State University; Phoenix Research Institute

5:10 PM (234) Improving the Understanding of Early Stage Amyloid Aggregation Using Microchannel Electrophoresis; Xavier Redmon; Zeb Vance; Christa Hestekin; Melissa Moss; University at Buffalo; University of South Carolina

---

3:50 PM (240) Targeted, High-Precision Prostate Cancer Imaging with Surface-Enhanced Raman Scattering Nanoprobes; Ishan Barman; Johns Hopkins University

4:10 PM (241) Integrating Spatial Features into FTIR Histological Image Classification; David Mayerich; Sebastian Berisha; Mahsa Lotfollahi; Ilker Gurcan; Jahandar Jahanipour; Rohit Bharagava; Hien Van Nguyen; University of Houston; University of Illinois

4:30 PM (242) Statin Loaded Hollow Gold Nanoparticles for Targeted Delivery to Atherosclerotic Plaques; Jennifer Gracie; Samuel Mabbott; Lauren Jamieson; Karen Faulds; Duncan Graham; University of Strathclyde

4:50 PM (243) Creating a Sandwich Assay of Magnetic and Gold Nanoparticles for Tau-Protein Quantification Using 1D-SERS - Making Alzheimer’s Disease Diagnosis Reliable; Claudia Frank; Viktort Maurer; Stefan Wundrack; Sarah Schmidt; Sabrina Zellmer; Georg Garnweitner; Rainer Stosch; Physikalisches-Technische Bundesanstalt (PTB); Institute for Particle Technology, TU Braunschweig

5:10 PM (244) Development of a New Diagnostic Method for Human African Trypanosomiasis Using Raman Spectroscopy; Alexandre Girard; Annette Macleod; Karen Faulds; Duncan Graham; University of Glasgow; University of Strathclyde

---

MONDAY 3:50 PM - 5:30 PM Room A706
18ATOM02: Recent Advances in Liquid Electrode Glow Discharge Plasmas
Chair: Andrew J. Schwartz, Jaime Orejas Ibanez

3:50 PM (235) Excluding Ambient Atmosphere and Its Implications for Optical Emission Spectroscopy Utilizing the Liquid Sampling - Atmospheric Pressure Glow Discharge Microplasma; Htoo Paing; Kenneth Marcus; Clemson University

4:10 PM (236) Detection and Controllable Fragmentation of Biomolecules via Solution Cathode Glow Discharge Mass Spectrometry; Courtney Walton; Judy Wu; Andrew Schwartz; Jacob Shelley; Rensselaer Polytechnic Institute; State University of New York at Buffalo

4:30 PM (237) Novel Instrumental Improvements in Solution-Cathode Glow Discharge Optical Emission Spectroscopy: Pushing the Limits; Steve J. Ray; Jaime Orejas; Andrew J. Schwartz; Nicholas V. Hazel; University at Buffalo; Instituts Nationale Universitarie Chappillonn

4:50 PM (238) Using Inductively Coupled Plasma with Solution-Cathode Glow Discharge for Mechanistic and Analytical Measurements; Michael Webb; Wade Maresh; University of North Carolina Wilmington

5:10 PM (239) Speaker Roundtable Discussion for 18ATOM02

---

MONDAY 3:50 PM - 5:30 PM Room L506
18BIM05: Spectroscopy and Precision Medicine
Chair: Michael Walsh

3:50 PM (245) Uranium Ore Concentrate Analysis Using Handheld Raman Spectrometer; Brent Devetter; Yin-Fong Su; Russell Tonkyn; Lucas Sweet; Jordan Corbe; Tanya Myers; Samuel Bryan; Timothy Johnson; Pacific Northwest National Laboratory

4:10 PM (246) Improved Monitoring of Uranium and Nitric Acid in Nuclear Materials Reprocessing through Targeted Modeling; Robert Lascola; Patrick O'Rourke; David Immel; Jean Plummer; Catherine Housley; Aegnerys Rodrigue-Santos; Savannah River National Laboratory

4:30 PM (247) Isotope-Ratio Analysis with Solution-Cathode Glow Discharge Mass Spectrometry (SCGD-MS); Garett Maclean; George Chan; Jacob Shelley; Rensselaer Polytechnic Institute; Lawrence Berkeley National Laboratory

4:50 PM (248) Resonance Ionization Mass Spectrometry for Actinide Isotopic Analysis; Michael Savina; Brett Isselhardt; Reto Trappitsch; Lawrence Livermore National Laboratory

5:10 PM (249) Extreme Ultraviolet Laser Ionization Mass Spectrometry for Actinide Analysis; Lydia Rush; Tyler Green; Ilya Kuznetsov; Andrew Duffin; Carmen Memoni; Colorado State University; Pacific Northwest National Laboratory

Next year: October 13 - 18, 2019, Palm Springs, CA
## TECHNICAL PROGRAM - MONDAY
### ORALS 3:50 - 5:30 PM

### Room A707
**18IR08: 2D Correlation Spectroscopy III**
Chair: Young Mee Jung

- **3:50 PM (250)** Two-Dimensional Raman Correlation Spectroscopy Study of Solution Mixtures; *Shuju Xu*, 1, 2; *Isao Noda*; *Young Jong Lee*; 1, 2; *Bruce Chase*; *John Rabolt*; 1, 2
- **4:10 PM (251)** Competitive Adsorption of Toluene-Heptane Binary Mixtures on a Hydrophobic Polymer Surface; *Dennis Hore*; 1, 2; *Margo Ramsay*; 2; *Bryce Mcgarvey*; 2; *Clementine Beutier*; 1
- **4:30 PM (252)** Probing Weak Coordination between *Eu*3+ and Saccharides Using the 2D-COS Approach; *Yizhuang Xu*; 1, 2
- **5:10 PM (253)** IR Imaging of 3D Orientation Angles and Order Parameters of Semicrystalline Polymers; *Young Jong Lee*; 1; *Jeremy Rowlette*; 1, 2

### Room A601
**18LIBS03: Biomedical and Pharmaceutical Applications**
Chair: Matthieu Baudelet, Francois Doucet

- **3:50 PM (255)** Biomedical and Biological Applications of Laser-Induced Breakdown Spectroscopy in Clinically Relevant Systems; *Steven Relshe*; *Alexandra Paulick*; *Christopher Heath*; *Robert Valente*; *Paul Dubovan*; *Kevin Beaugrand*; *Mark Armstrong*; *Doris Rusu*; *University of Windsor*
- **4:10 PM (256)** Analysis of Carcinogens and Toxins Using LIBS/SIBS; *Prasoon Diwakar*; 1, 2; *Melissa Fernandez*; 1, 2; *Alexis E Floback*; 1, 2; *NIST*; *Daylight Solutions*
- **4:30 PM (257)** Chemometrics-Assisted LIBS Method Development for Cancer Detection and Characterization; *Alix Dehayem-Massop*; *Emily Otieno Akinji*; *Hudson Angeyo Kalambuka*; *University of Nairobi*
- **5:10 PM (258)** Rapid Protein Analysis via Laser-Induced Breakdown Spectroscopy; *Jorg Hermann*; 1, 2; *Banu Sezer*; 1, 2; *Gonca Bilge*; 1, 2; *Ismael H. Boyaci*; 1, 2; *NANOSENS Industry and Trade Inc*; *Hacetette University*; *Aix-Marseille University, CNRS, LP3*

### Room L504
**18PAT06: PAT Enabled Flow Chemistry and Continuous Manufacturing**
Chair: Jim Rydzak, Claudia Corredor

- **3:50 PM (260)** In-Line IR Spectroscopy and On-Line UPLC to Monitor Continuous API Manufacturing; *Elyse Towns*; *Robert Bondi*; *Christian Airiau*; *GlaxoSmithKline*
- **4:10 PM (261)** Development of Analytical Solutions for Real-Time Monitoring of Flow Reactors; *Brian Marquardt*; *MarqMetrix Inc.*
- **4:30 PM (262)** Progress and Challenges Associated with Low Dose Monitoring of Pharmaceutical Formulations; *Benoit Igne*; *GlaxoSmithKline*
- **4:50 PM (263)** Continuous Chemical Process Development Enabled by Automation and PAT; *David Ford*; *Snapdragon Chemistry*

### Room L504
**18PALM07: Applications of Advanced Vibrational Spectroscopy to Protein Characterization**
Chair: Sergei Kazarian, Bernadette Byrne

- **3:50 PM (265)** Application of ATR-FTIR Spectroscopic Imaging to Industrial Scale Production of Therapeutic Antibodies; *Bernadette Byrne*; *Maxime Boulet-Audet*; *Sergei Kazarian*; *Imperial College*
- **4:10 PM (266)** Probing Self-Assembly and Gelation in Proteins and Complex Fluids through Raman Spectroscopy, DLS, Optical Microrheology & Taylor Dispersion Analysis; *Samui Amin*; 3; *Natalia Markova*; 2; *Neil Lewis*; 1; *Manhattan College*; *Malvern Panalytical, Sweden*; *Malvern Panalytical, USA*
- **4:30 PM (267)** The Development of Real-Time UV Resonance Raman Spectroscopy for Monitoring Biotransformation Producing High Value Chemicals; *Heidi Fisk*; 1; *Roy Goodacre*; 2; *Chloe Westely*; 2; 1*University of Liverpool*; 2*ASTRAZENECA*; 3*University of Manchester*
- **4:50 PM (268)** Normal and Deep UV Raman Spectroscopy for Probing Protein Structural Integrity: Di(Tri)Sulfide Groups and Polypeptide Backbone; *Igor Lednev*; *University at Albany, SUNY*
- **5:10 PM (269)** High Throughput Identification of Bacteria Using ATR-FTIR; *Angela M Flack*; 1, 2; *Cerys A Jenkins*; 2; *Matthew J Baker*; 1; *Ganesh D Sockalingum*; 2; 1*University de Reims Champagne-Ardenne*; 2*University of Strathclyde*

### Room A707
**18IR08: 2D Correlation Spectroscopy III**
Chair: Young Mee Jung

- **3:50 PM (250)** Two-Dimensional Raman Correlation Spectroscopy Study of Solution Mixtures; *Shuju Xu*, 1, 2; *Isao Noda*; 1; *Young Jong Lee*, 1, 2; *Bruce Chase*; *John Rabolt*; 1, 2
- **4:10 PM (251)** Competitive Adsorption of Toluene-Heptane Binary Mixtures on a Hydrophobic Polymer Surface; *Dennis Hore*; 1, 2; *Margo Ramsay*; 2; *Bryce Mcgarvey*; 2; *Clementine Beutier*; 1; *University of Victoria*; *Imperial Oil*
- **4:30 PM (252)** Probing Weak Coordination between *Eu*3+ and Saccharides Using the 2D-COS Approach; *Yizhuang Xu*; 1, 2
- **5:10 PM (253)** IR Imaging of 3D Orientation Angles and Order Parameters of Semicrystalline Polymers; *Young Jong Lee*; 1; *Jeremy Rowlette*; 1, 2

### Room A601
**18LIBS03: Biomedical and Pharmaceutical Applications**
Chair: Matthieu Baudelet, Francois Doucet

- **3:50 PM (255)** Biomedical and Biological Applications of Laser-Induced Breakdown Spectroscopy in Clinically Relevant Systems; *Steven Relshe*; *Alexandra Paulick*; *Christopher Heath*; *Robert Valente*; *Paul Dubovan*; *Kevin Beaugrand*; *Mark Armstrong*; *Doris Rusu*; *University of Windsor*
- **4:10 PM (256)** Analysis of Carcinogens and Toxins Using LIBS/SIBS; *Prasoon Diwakar*; 1, 2; *Melissa Fernandez*; 1, 2; *Alexis E Floback*; 1, 2; *NIST*; *Daylight Solutions*
- **4:30 PM (257)** Chemometrics-Assisted LIBS Method Development for Cancer Detection and Characterization; *Alix Dehayem-Massop*; *Emily Otieno Akinji*; *Hudson Angeyo Kalambuka*; *University of Nairobi*
- **5:10 PM (258)** Rapid Protein Analysis via Laser-Induced Breakdown Spectroscopy; *Jorg Hermann*; 1, 2; *Banu Sezer*; 1, 2; *Gonca Bilge*; 1, 2; *Ismael H. Boyaci*; 1, 2; *NANOSENS Industry and Trade Inc*; *Hacetette University*; *Aix-Marseille University, CNRS, LP3*

### Room L504
**18PAT06: PAT Enabled Flow Chemistry and Continuous Manufacturing**
Chair: Jim Rydzak, Claudia Corredor

- **3:50 PM (260)** In-Line IR Spectroscopy and On-Line UPLC to Monitor Continuous API Manufacturing; *Elyse Towns*; *Robert Bondi*; *Christian Airiau*; *GlaxoSmithKline*
- **4:10 PM (261)** Development of Analytical Solutions for Real-Time Monitoring of Flow Reactors; *Brian Marquardt*; *MarqMetrix Inc.*
- **4:30 PM (262)** Progress and Challenges Associated with Low Dose Monitoring of Pharmaceutical Formulations; *Benoit Igne*; *GlaxoSmithKline*
- **4:50 PM (263)** Continuous Chemical Process Development Enabled by Automation and PAT; *David Ford*; *Snapdragon Chemistry*

### Room L504
**18PALM07: Applications of Advanced Vibrational Spectroscopy to Protein Characterization**
Chair: Sergei Kazarian, Bernadette Byrne

- **3:50 PM (265)** Application of ATR-FTIR Spectroscopic Imaging to Industrial Scale Production of Therapeutic Antibodies; *Bernadette Byrne*; *Maxime Boulet-Audet*; *Sergei Kazarian*; *Imperial College*
- **4:10 PM (266)** Probing Self-Assembly and Gelation in Proteins and Complex Fluids through Raman Spectroscopy, DLS, Optical Microrheology & Taylor Dispersion Analysis; *Samui Amin*; 3; *Natalia Markova*; 2; *Neil Lewis*; 1; *Manhattan College*; *Malvern Panalytical, Sweden*; *Malvern Panalytical, USA*
- **4:30 PM (267)** The Development of Real-Time UV Resonance Raman Spectroscopy for Monitoring Biotransformation Producing High Value Chemicals; *Heidi Fisk*; 1; *Roy Goodacre*; 2; *Chloe Westely*; 2; 1*University of Liverpool*; 2*ASTRAZENECA*; 3*University of Manchester*
- **4:50 PM (268)** Normal and Deep UV Raman Spectroscopy for Probing Protein Structural Integrity: Di(Tri)Sulfide Groups and Polypeptide Backbone; *Igor Lednev*; *University at Albany, SUNY*
- **5:10 PM (269)** High Throughput Identification of Bacteria Using ATR-FTIR; *Angela M Flack*; 1, 2; *Cerys A Jenkins*; 2; *Matthew J Baker*; 1; *Ganesh D Sockalingum*; 2; 1*University de Reims Champagne-Ardenne*; 2*University of Strathclyde*
TECHNICAL PROGRAM - MONDAY
ORALS 3:50 – 5:30 PM

5:10 PM (274) Exploiting a New Class of Raman Active Dyes and Near Infra-Red SERS for Biological Applications; Amy Morrison1; Konstantinos Plakas2; Lauren Rosch3; Michael Detty3; Neil Shand3; Karen Faulds1; Duncan Graham1;
1The University of Strathclyde; 2Defence Science Technology Laboratories (DSTL); 3The University at Buffalo

5:10 PM (279) Roundtable on the Future Development of ROA

MONDAY 3:50 PM - 5:30 PM Room A703
18RAM17: Raman Optical Activity
Chair: Christian Johannessen

3:50 PM (275) Studying The Conformational Behaviour of Intrinsically Disordered Proteins with Raman Optical Activity; Carl Mensch1; 2; Christian Johannessen2; 1University of Antwerp; 2Ghent University

4:10 PM (276) Vibrational Optical Activity of Cyclic Tetrapeptides; Christian Merten1; Carl Mensch2; Nadja Berger1; Wolfram Sander1; Christian Johannessen2; 1Ruhr University Bochum; 2University of Antwerp

4:30 PM (277) Structural Analysis of Active Site in Microbial Rhodopsin Using Raman Optical Activity; Tomotsumi Fujisawa; Saga University

5:10 PM (279) Roundtable on the Future Development of ROA

5:10 PM (284) Determination of the Main Phase Transition Temperature of Phospholipids by Nanoplasmonic Sensing; Susanne Wiedmer1; Wen Chen1; Filip Dusa2; Joanna Witos3; Suvi-Katriina Ruokonen1; 1University of Helsinki; 2Institute of Anal. Chem. of the CAS, Czech Republic; 3Dept. of Bioprod./Biosyst., Aalto Univ., Finland

3:50 PM (285) Discovery of Face-On Phase of a Pentacene Film Revealed by pMAIRS; Takeshi Hasegawa1; Nobutaka Shioya1; Takaumi Shimoaka1; Hiroyouki Yoshida2; Tomoyuki Koganezawa2; Kazuo Eda2; Richard Murdey1; Takaumi Shimoaka1; 1ICR, Kyoto University; 2Chiba University; 3JASRI; 4Kobe University

4:10 PM (286) Molecular Structures of Buried Semiconducting Polymer Interfaces Investigated with Sum Frequency Generation Vibrational Spectroscopy; Zhan Chen; University of Michigan

5:10 PM (289) Raman Spectroscopy of Polymer Semiconductors Used for Electronic Devices; Yukio Furukawa; Yoshifumi Wada; Yasuhiro Iwasawa; Ippei Enokida; Waseda University

EXHIBIT HALL OPENING - MONDAY
5:30 - 7:30 PM, Exhibit Hall (Atrium Ballroom)
Bring your drink tickets and raffle tickets!

Next year: October 13 - 18, 2019, Palm Springs, CA
TUESDAY 9:15 AM - 10:55 AM Room L401
18AES04: Nanoscale Electrokinetics
Chairs: Sagnik Basuray, Edgar Goluch
9:15 AM (292) Microfluidics, Automation and Big-Data for Systems Biology; Hang Lu; Georgia Institute of Technology
9:35 AM (293) Frequency-Selective Electrokinetic Enrichment of Nanocolloidal Biomarkers; Nathan Swami; Ali Rohani; Kuo-Tang Liao; Chia-Fu Chour; University of Virginia; Academia Sinica, Taiwan
9:55 AM (294) ESSENCE – Shear-Enhanced, Flow-Through Nanoporous Capacitive Electrode, a New Electrochemical Sensor; Sagnik Basuray; Siril Arockiam; Yu Hsuan Cheng; Lixin Feng; Pedro Moura; Roli Kargupta; Nikhil Koratkar; Sayandeep Chatterjee; New Jersey Institute of Technology; Pacific Northwest National Laboratory; Rensselaer Polytechnic Institute
10:15 AM (295) Nanopore Single-Molecule Sensors for Oligo- and Polysaccharide Analysis; Jason Dywer; Buddini Karawdeniya; Y.M. Nuwan Bandaran; Jonathan Nichols; Robert Chevalier; University of Rhode Island
10:35 AM (296) Manipulating Microbial Factories for Nanomanufacturing; Rodrigo Martinez-Duarte; Clemson University

TUESDAY 9:15 AM - 10:55 AM Room A706
18ATOM04: Excitation and Ionization Techniques for Atomic and Molecular Spectroscopy
Chair: Joachim Franzke
9:15 AM (297) New Insights into Analysis of Low-Mass Molecules by Dielectric Barrier Discharge Ionization Mass Spectrometry; Bienvenida Gilbert-Lopez; University of Jaen
9:35 AM (298) The Use of Dielectric Barrier Discharge Ionization for Mass Spectrometry of Cholesterol in Mouse Brains; Mercede Erickson; Paul B Farnsworth; John C Price; Isabella James; Ethan Edwards; Brigham Young University
9:55 AM (299) Mixed-gas Flowing Atmospheric-Pressure Afterglow as a Chemical- and Photo-Ionization Source for Mass Spectrometry; Sunil Badal; Paul Farnsworth; Jessica Hellinger; Jacob Shelley; Rensselaer Polytechnic Institute; Brigham Young University

TUESDAY 9:15 AM - 10:55 AM Room L506
18BIM06: Biomedical Spectroscopy
Chair: Katherine Gilwa
9:15 AM (300) Influence of Temperature, Pressure and Humidity on Dielectric Barrier Discharge Ionization; Pascal Vogel; Ulrich Marggraf; Joachim Franzke; Leibniz-Institut für Analytische Wissenschaften –
9:35 AM (301) Reaction Processes of Arsenic Compounds in a Dielectric Barrier Discharge Observed by Optical Emission Spectrometry; Sebastian Burgherr; Jan Kratzer; Felix David Klute; Joachim Franzke; ISAS; Institut für Analytische Wissenschaften

TUESDAY 9:15 AM - 10:55 AM Room L503
18FORENS03: Chemometrics in Forensics
Chair: Brooke W. Kammrath
9:15 AM (302) Blood Analysis Using Attenuated Total Reflection (ATR) Fourier Transform-Infrared (FT-IR) Spectroscopy for Criminal Investigation; Ewelina Mistek; Lenka Halamanov; Igor Lednev; University at Albany, SUNY
9:35 AM (303) Wide-Field Intraoperative Raman Imaging Technique to Guide Cytoreductive Surgical Resection; Sandrine Davi; Barbara Vanderhyden; Sangeeta Murugkar; Brian Wilson; Jean-Philippe Tremblay; Guillaume Sheehy; Kelly Aubertin; Frederic Leblond; Ecole Polytechnique de Montreal; University of Toronto; Ottawa Hospital; Carlton University
9:55 AM (304) New SERS Strategy for Characterising the Phenotypic Evolution of Circulating Tumour Cells; Yuling Wang; Simon Tsao; Jing Wang; Andreas Behren; Jonathan Cebon; Matt Trau; Macquarie University; AIBN, The University of Queensland; SCMB, The University of Queensland; University of Melbourne
10:15 AM (305) Label-Free Raman Spectroscopy Elucidates Biomolecular Response to Radiation Therapy and Identifies Intrinsic Resistance; Samosh Paud; Ishan Barman; Johns Hopkins University
10:35 AM (306) Spectroscopic Biofluid Diagnosis, Monitoring and Therapeutic Profiling of Melanoma Patients; Katie Spalding; University Of Strathclyde

TUESDAY 9:15 AM - 10:55 AM Room L503
18FORENS03: Forensics
Chair: Brooke W. Kammrath
9:15 AM (307) Application of Artificial Neural Networks to DART-HRMS Data for the Forensic Identification of
TECHNICAL PROGRAM - TUESDAY
ORALS 9:15 - 10:55 AM

Fauna and Flora; Rabi Ann Musah; Samira Beyramysoltan; Justine E. Giffen; State University of New York at Albany
9:35 AM (308) 500nm IR Spectroscopy Combined with Chemometrics for the Analysis of Forensic Science; Frank Weston¹; Curt Marcott²; Eoghon Dillon¹; Debra Cook¹; Jay Anderson¹;¹;²Photothermal Spectroscopy Corp; 'Light Light Solutions
9:55 AM (309) Chemical Analysis and Statistical Interpretation of Gunshot Residues Using LIBS and Electrochemical Sensors; Tatiana Trejos; Korina Menking-Hoggatt; Luis Arroyo; West Virginia University
10:15 AM (310) Man vs. Machine – Comparing Multivariate Classification to an Experienced Forensic Examiner for Ignitable Liquid Identification in Fire Debris; James Harynuk; Robin Abel; University of Alberta
10:35 AM (311) A Spectral Transfer Method for the Forensic Analysis of Fingerpaint Polishes and Gels by Infrared Spectroscopy; Brooke Kamrath¹; Alyssa Smale²; Donald Dahlberg²;¹University of New Haven; ²Lebanon Valley College

TUESDAY 9:15 AM - 10:55 AM Room A707
18IR05: Quantum Cascade Lasers – I
Chair: Bernhard Lendl

9:15 AM (312) New QCL Based Sensing Strategies for Liquids and Gases; Bernhard Lendl; Stefan Lindner; Jakob Hayden; Christian Kristemand; Andreas Schwaighofer; Johannes Paul Waclawek; TU Wien
9:35 AM (313) Mid-IR Photothermal Deflection Spectroscopy Based on Quantum Cascade Lasers: Potential Application for Non-Invasive Glucose Monitoring; Otto Hertzberg¹;²; Alexander Bauer¹;²; Werner Mäntele¹;¹Institute of Biophysics, Goethe-University; ²DiaMonTech GmbH
9:55 AM (314) Developments in Biophysical Analysis of Proteins Using Microfluidic Modulation Spectroscopy; Eugene Ma; Redshift Bioanalytics
10:15 AM (315) Quantum Cascade Laser Back-Reflection Spectroscopy at Grazing-Angle Incidence Using Fast Fourier Transform Pre-processing; Samuel P. Hernández-Rivera¹; Leonardo C. Pacheco-Londoño¹;²; Nataly J. Galán-Rey²;²; Ricardo Infante-Castillo²; Amanda M. Figueroa-Navedo¹; José L. Ruiz-Caballero¹;¹University of Puerto Rico-Mayaguez; ²Simón Bolívar University, Barranquilla, Colombia; ³University of Puerto Rico- Areceibo
10:35 AM (316) IR Spectroscopic Method for the Isotopic Analysis of UF₆; K. Alicia Strange Fessler; Steven Serkiz; Patrick O'Rourke; Nicholas DeRoller; Darrell Simmons; Leigh Martin; ¹Savannah River National Laboratory; Oak Ridge National Laboratory

TUESDAY 9:15 AM - 10:55 AM Room A601
18LIBS02: Molecular Signal in LIBS
Chair: Matthieu Baudelet, Francois Doucet

9:15 AM (317) Analytical Application of Molecular Emission in LIBS; Michael Gaft; Lev Nagli; Yosef Raichlin; Ariel University
9:35 AM (318) Application of Laser-Induced Breakdown Spectroscopy for Diatomic Cyanide Measurements; Christopher Helstern; Christian Parigger; University of Tennessee Space Institute
9:55 AM (319) Adaptive Soft Modeling for Oil Sands Analysis with LIBS; Pablo Sobron¹; Kris Zacny²;³Impossible Sensing; ³Honeybee Robotics
10:15 AM (320) Application of LIBS to the Analysis of Tyre Rubber Material from Industrial Production; Johannes Pedarmig¹; Stefan Trautner¹; Wolfgang Spendenhofer¹; Johannes Lackner¹; Norbert Huber¹;¹Johannes Kepler University Linz; ²Kraiburg Austria GmbH & Co KG
10:35 AM (321) Unraveling Uranium Oxide Spectral Features from Laser-Produced Plasma; Sivanandan Harila; Brian Brumfield; Mark Phillips; Pacific Northwest National Laboratory

TUESDAY 9:15 AM - 10:55 AM Room A704
18PMA02: Solving Industrial Problems with Vibrational Spectroscopy
Chair: Patrick Wray

9:15 AM (322) Optimisation and Application of Near-Infrared Spectroscopy for Continuous Mixing Technology; James Kimber; David Wilson; Pfizer
9:35 AM (323) How Spectroscopy is Facilitating Lean Analysis in the Pharmaceutical Industry; Kieran O'Connor¹; John Wasylky²; Ming Huang³; Robert Wethman³; Bristol-Myers Squibb Co.; ²SK biotek Ireland
9:55 AM (324) 4-in-1 Probe: Crystallization & Polymorph Monitoring Using in-situ High Resolution Bright Field Microscopy, 532±785 nm Particle Focused Raman, Particle Size; Gregor Hsiang; Richard Becker¹Blaze Metrics LLC
10:15 AM (325) Drug-in-Live-Cell Analysis for Pharmaceutical Applications: Subcellular Imaging and Cell Monolayer Studies by FTIR; Ka Lung Andrew Chan¹; Ali Altharawi¹; Gianfelice Cinque²; ³King's College London; ¹Diamond light source
10:35 AM (326) Spectroscopic Method Development for the Real-Time Authentication of Pharmaceutical Tablets in the Field; Naveem Hossain; Carl Anderson; James Drennen; Duquesne University

TUESDAY 9:15 AM - 10:55 AM Room L508
18RAM05: Bioanalytical SERS III
Chair: Roy Goodacre

9:15 AM (327) Surface Enhanced Raman Spectroscopy (SERS) and Paper Fluidics for Preeclampsia Biomarker Quantification; Monika Schechinger; Mahua Choudhury; Gerard Cote; Texas A&M University
9:35 AM (328) Utilization of Plasmonic Nanostructures for Highly Sensitive Vibrational Biospectroscopy; Juergen Popp¹;²;¹Leibniz Institute of Photonic Technology; ²Friedrich Schiller University Jena
9:55 AM (329) SERS Quantification at Low Concentrations; Alexandre Brolo; University of Victoria
10:15 AM (330) Application of SERS-Based Microfluidics for Simultaneous Detection of Multiple Biomarkers; Jaehyun Choi; Namhyun Choi; Hanyang University

Next year: October 13 - 18, 2019, Palm Springs, CA
10:35 AM (331) Portable Nanosensors and SERS as a Method of Explosives Detection; Kirsty Milligan; Kirsten Gracie; Neil Shand; Duncan Graham; Karen Faulds; University of Strathclyde; Defence Science Technology Laboratory (DSTL)

10:35 AM (341) Characterization of Roman Glass Tesserae via Portable X-Ray Fluorescence Spectrometry; Mary Kate Donais; Nicolas Allen; David B. George; Saint Anselm College Chemistry Department; Saint Anselm College Classics Department

TUESDAY 9:15 AM - 10:55 AM Room L505
18RAM08: Transmission Raman Spectroscopy
Chair: Mark Mabry

9:15 AM (332) Signal Response as a Function of Depth in Transmission Raman Measurement of Turbid Matter; Jun Zhao; B&W Tek

9:35 AM (333) Thinning Blood and Killing Rats; Pharmaceutical Analysis Using Transmission Raman; Julia Griffen; Andrew Owen; Pavel Matousek; Agilent Technologies; Central Laser Facility, STFC

9:55 AM (334) Development and Implementation of a Transmission Raman Method for the Quantification of Physical Changes in Pharmaceutical Tablets; Shawn Lacasse; Cynthia Magee; Sonja Sekulic; Michael Pelletier; Pfizer Worldwide Research and Development

10:15 AM (335) Application of Transmission Raman Spectroscopy for Challenging Molecular Entities in Early Phase Drug Development; Jane Li; Jeffrey Davis; Larry Wigman; Genentech Inc.

10:35 AM (336) Transmission Raman Multivariate Analysis to Assess Effect of Food as a Dosage Vehicle on Physical Stability of a Drug Product; Ashish Punia; Nicole Canfield; James Ormes; Matthew Lammi; Merck & Co.

10:35 AM (342) LIBS: Evolutionary and Revolutionary Aspects; Nicoletti Omenetto; University of Florida

9:55 AM (344) Perspectives in Analytical Plasma and Atomic Spectrometry; Gary Hiefl; Indiana University

10:15 AM (345) The Molecular Side of Atomic Spectroscopy; Jacob Shelley; Sunil Badal; Garrett Maclean; Ifeoluwa Ayodeji; Montwaun Young; Jessica Hellinger; Theresa Evans-Nguyen; Rensselaer Polytechnic Institute; University of South Florida

10:35 AM (346) Evolution of Raman Spectroscopy – Awakening Giant? Pavel Matousek; Rutherford Appleton Laboratory

10:55 AM (347) Deciphering Molecular Signatures of the Cancer Cell and Its Microenvironment with Raman Spectroscopy; Ishan Barman; Johns Hopkins University

TUESDAY 9:15 AM - 10:55 AM Room L507
18SPECIAL06: Past, Present and Future: Celebrating 60 Years of SAS and Spectroscopy Innovations
Chairs: Mike Blades, Greg Klunder

9:15 AM (337) New Perspectives on Portable Raman Spectroscopy in Archaeometry; Peter Vandenabeele; Anastasia Rousaki; Possum Pinc; Sylvia Lycke; Luc Moens; Ghent University

9:35 AM (338) Differential Bioavailability of Strontium in Food: Implications for 87Sr/86Sr Sourcing in Bone and Teeth; Deanna Grimstead; The Ohio State University

9:55 AM (339) Reconstructing Anthropogenic Landscape through ICP-MS; Urban Transformation at Tlalancaleca, Central Mexico, during the Formative Period (800 BC-AD 250); Tatsuya Murakami; Tulane University

10:15 AM (340) Identification of Damaging Sulfur Compounds in Skeletal Collections – A Novel Application of Wavelength Dispersive Spectroscopy (WDS); Kimberly Foecke; Douglas Meier; Edward Vicenzin; George Washington University; Pennsylvania State University; National Institute of Standards and Technology; Smithsonian Institution Museum Conservation Inst.

9:15 AM (348) When the Standard Sampling Method Does Not Give Optimal Results; Franklin Barton; James De Haseth; LLS Instruments, Inc.; LLS, LLC

9:35 AM (349) Nonstaining Blood Flow Imaging Base on Optical Interference Due to; Yukihiro Ozaki; Mika Ishigaki; Hiroki Hayashi; Yoshihiko Nakayama; Hideya Taniguchi; Ichiro Ishimaru; Kwansei Gakuin University; Aoi Electronics Co. Ltd.

9:55 AM (350) Current Status and Future Trends of Miniaturized NIR Spectroscopy; Christian Huck; University of Innsbruck

10:15 AM (351) Application of Time-of-Flight NIR Spectroscopy to Cellulosic Materials; Satoru Tsuchikawa; Ryunosuke Kitamura; Keiji Konagaya; Tetsuya Inagaki; Nagoya University; Kyoto University; Daitichi Sanko Company

10:35 AM (352) Quantitative Determination of Catechin and Epicatechin Using NIR Spectroscopy; Shigeaki Morita; Osaka Electro-Communication University

18SPSJ03: Near Infrared Spectroscopy
Chair: Shigeaki Morita

9:15 AM (343) Novel Laser Ablation Sampling Technologies in Laser Induced Breakdown Spectroscopy (LIBS); Vassilia Zorba; Lawrence Berkeley National Laboratory

9:35 AM (346) Evolution of Raman Spectroscopy – Awakening Giant? Pavel Matousek; Rutherford Appleton Laboratory

10:55 AM (347) Deciphering Molecular Signatures of the Cancer Cell and Its Microenvironment with Raman Spectroscopy; Ishan Barman; Johns Hopkins University
TECHNICAL PROGRAM - TUESDAY

11:50 AM The Mirage IR Microscope: Solving Two of the Biggest Problems in IR Spectroscopy, Photothermal Spectroscopy, Presenter: Craig Prater

12:00 PM Introduction of Technology Innovations and Applications of FERGIE Imaging Spectrograph, Princeton Instruments, Presenter: Peng Zou

12:10 PM Smart Micro and NanoRamanTM Imaging - from Correlated towards Real SameSpotTM Co-Localized Microscopy, Horiba, Presenter: Marc Chaingneu

12:20 PM Monitoring and Control in Crystallization Processes Using Process Raman Spectroscopy, Kaiser Optical, Presenter: Sean Gilliam

12:30 PM Raman Concatenation – A Novel Method to Get “The Whole Picture”, Innovative Photonic Solutions; Presenter: Scott Rudder

12:40 PM Latest Developments in Raman Spectroscopy, Renishaw, Presenter: Tim Prusnick

12:50 PM OEM by Design: Speeding Spectroscopy’s Time to Market, Wasatch, Presenter: Michael Matthews

1:00 PM Combining VCD & MRR for Full Chiral Analysis in R&D, BioTools, Presenter: Rina Dukor

TECHNICAL PROGRAM - TUESDAY

POSTERS SESSIONS & COFFEE BREAKS 11:00 AM - 12:00 PM & 3:10 - 3:50 PM, Exhibit Hall

Set up Tuesday posters by 10:45 AM, remove at 3:50 PM

TUESDAY 11:00 AM - 12:00 PM & 3:10 - 3:50 PM
Exhibit Hall (Atrium)
18TPART Posters 1 - 2
Art & Archeology

Poster Board #1
(353) On Time Analysis of Archaeological Residues by Using Laser Induced Breakdown Spectroscopy; Efe Kucukkeskin1, 2; Burak Yedierler2; Kemal Efe Eseller2; 1ROKETSAN A.S.; 2Middle East Technical University; 3Attilm University

Poster Board #2
(354) STEM Education through Optics and Spectroscopy in an Public Facing Lab in a Museum Setting; Heidi Perez1, 2; Nathalie Manzano3; Theodore Caplow3; Prasoon Dwakar4, 4; 1Frost Science Museum; 2Miami Dade College Honors Program; 3Grayscale Partners; 4Purdue University/South Dakota School of Mines

TUESDAY 11:00 AM - 12:00 PM & 3:10 - 3:50 PM
Exhibit Hall (Atrium)
18TPLIBS Posters 3 - 17
Laser-Induced Breakdown Spectroscopy

Poster Board #3
(355) Femtosecond Laser Induced Breakdown Spectroscopy for Standoff Detection of Explosive Molecules; Abdul Kalam S; Venugopal Rao Soma; ACHRHEM, University of Hyderabad

Poster Board #4
(356) Mapping of Uranium and Iron in Surrogate Nuclear Debris Using Laser-Induced Breakdown Spectroscopy; Michael Shatani1, 2; Mark Gragston2; Christian Parigget3; Kathryn McIntosh4; John Auxier IF; Zhili Zhang5; 1Air Force Institute of Technology; 2University of Tennessee; 3University of Tennessee Space Sciences Koblenz; 4Los Alamos National Laboratory

Poster Board #5
(357) First Evaluation of Collagen Content in Ancient Bones by Laser-Induced Breakdown Spectroscopy (LIBS) Before Radiocarbon Dating; Xuexi Bai1, 2; Apolline Pin1; Pascale Richardin1; Jингин Lin3; Maxime Lopez3; Corinna Koch Dandolo4; Vincent Detalle1; 1C2RMF; 2USR3224-CRC; 3Changchun University of Technology

Poster Board #6
(358) The Multivariate Analysis of LIBS Spectra of Quartz Crystal; Awadhesh K. Rai1; Sonali Dubey1; Rohit Kumar2; ABHISHEK K. Rai1; Jayanta K. Pati1; 1University of Allahabad; 2CMP. Degree College Allahabad 211002, India.

Poster Board #7
(359) The Detection of Disulfur Radical Using LIBS-LIF; Wen Zhang; Huazhong University of Science and Technology, Wuha

Poster Board #8
(360) Detection of Inorganic Gunshot Residue in Nasal Mucosa using Laser-Induced Breakdown Spectroscopy (LIBS); Nick Laraia1; Marianne Staretz1; Rosemarie Chin2; 1Cedar Crest College; 2Alvernia University

Poster Board #9
(361) in-situ Detection of Deuterium Retained in the FTU Toroidal Limiter by Laser Induced Breakdown Spectroscopy (LIBS); Violeta Lazic; Salvatore Almaviva; Luisa Canee; Francesco Colao; ENEA

Poster Board #10
(362) Determination of Antimony Concentrations in Widely Used Plastic Objects by Laser Induced Breakdown Spectroscopy (LIBS); Violeta Lazic1; Montserrat Filella1; Andrew Turner1; 1ENEA; 2University of Geneva; 3Plymouth University, UKPoster Board #11
(363) Molecular Dynamic Simulations in Laser-Induced Plasmas on Atomistic Scales; Thomas Dietz; Peter Kohns; Georg Ankerhold; University of Applied Sciences Koblenz

Poster Board #12
(364) Multi-Analytical Prototype LIBS-LIF-Raman System for in situ Heritage Analysis; Vincent Detalle1; Xuexi Bai1, 2; Marta Castillejo3; Mohamed Oujja3; Mikel Sanz4; 1C2RMF, France; 2Centre de Recherche sur la Conservation (CRC), Fr: 3Instituto de Quimica Fisica Rocsalosn (CSIC)

Poster Board #13
(365) Combination of Atomic and Molecular LIBS for an Improved Quantification of Harmful Species in Cement-Based Materials; Thomas Dietz2; Cassian Gottlieb3; Gerd Wilsch2; Christian Bohling2; Peter Kohns1; Georg Ankerhold1; 1University of Applied Sciences Koblenz

Next year: October 13 - 18, 2019, Palm Springs, CA
Poster Board #14
(366) Microextraction of Uranium and Nuclear Forensic Analysis by Chemometric Based LAMIS; Joy Namachchivaya; Fredrick Oduor; Hudson Kalambuka; University of Nairobi
Poster Board #15
(367) Detection of Visually Unrecognizable Brazing Tracks; Kristina Virostková; David Procházka; Jakub Klus; Pavel Požíška; Jozef Kaiser; Michal Brada; 1Atom Trace; 2Brno University of Technology; 3Masaryk University, Brno
Poster Board #16
(368) Application of Handheld Laser-Induced Breakdown Spectroscopy (LIBS) to Develop Quantitative Calibration Curves for the Analysis of Heritage Copper Alloys; Elizabeth Coquillette; Richard Hark; Anikó Bezar; 1Yale Inst. for Preservation of Cultural Heritage; 2Yale University; 3Juniata College
Poster Board #17
(369) Partial Least Squares Regression for Calibration Modeling toward the Determination of the Limit of Detection in 90Zr and 94Zr Generated by Zirconium Metallic Particles on Silica Substrates via Laser Ablation Molecular Isotopic Spectroscopy; C.D. Harris; Codjo A. Akpovo; Lewis E. Johnson; Ashley C. Stowe; Florida A&M University

TUESDAY 11:00 AM - 12:00 PM & 3:10 - 3:50 PM
Exhibit Hall (Atrium)
18TPMISC Posters 18 – 19
Miscellaneous
Poster Board #18
(370) Thermal and Cure Kinetics Study of Epoxy Molding Compounds Cured with Thermal Latency Catalysts; Kiwoong Jeong; Daeyeon Lee; Hanjung Cho; Changyeol Lee; KCC Central Research Institute
Poster Board #19
(371) A Low Cost Linear CCD Module; Francis Esmond-White; Esben Rossel; Esmond-White Technologies, LLC
Poster Board #20
(372) Advanced Nanomaterials for Bio-Monitoring; Evan Wujcik; The University of Alabama
Poster Board #21
(373) High Throughput Manufacture of Metal Nano Rings using Chemical Approaches: Particle Lithography with Organosilanes followed by Electroless Deposition of Nickel; Neepa M.K. Kuruppu Arachchige; Phillip C Chambers; Ashley M Taylor; Jayne C Gano; Louisiana State University
Poster Board #22
(374) Ferritin Nanocages & Nanopipettes for High Throughput Protein Recognition; Rebekah Byford; Agnieszka Rutkowska; Joshua Edel; Tony Cass; Geoff Baldwin; Imperial College London
Poster Board #23
(375) Evaluation of ZnO-MWCNTs as Solvent Free Nano-Scrubber for Efficient H2S Removal; Amardeep Singh; Vibhav Pandey; Manoj Upreti; Jayaraj Christopher; G. S. Kapur; SSV Ramakumar; R&D, Indian Oil Corporation Ltd.
Poster Board #24
(376) Bisphenol A Degradation by Peroxymonosulfate Activated with Magnetically Separable Nanocomposite; Zachary Bailey; Anselm Omoike; University of South Carolina-Upstate
Poster Board #25
(377) Tuning the Surface Plasmon Resonance by Patternning Silver Nanoparticles Using Glucose Crystal Deposition and Mechanical Deformation; Meenakshi Ranasinghe; Clemson University
Poster Board #26
(378) FlowCam Nano Provides Counts, Sizes and Images of Nano and Micro Particles: Application to a Therapeutic Protein Pumping Study; Kent Peterson; Cheng Her; Chris Sieracki; Chris Mills; John Carpenter; 1University of Colorado-Denver; 2Fluid Imaging Technologies
Poster Board #27
(379) Raman Probe Study of Biogenic Molecules Essential Content on Tempel; Bibin Andriana; Anggara Mahardika; Anisa Maryani; Akihiko Takaneti; Saya Kato; Shinsuke Fujiwara; Hidetoshi Sato; Kwansei Gakuin University
Poster Board #28
(380) Practical Sample Based Approaches to Minimize Fluorescence Interference in Raman Spectroscopic Measurements; Peter Larkin; Boyu Li; Adam Fischmann; Solvay, Technology Solutions Group
Poster Board #29
(381) Phase Separation in Na2O-B2O3-SiO2 (NBS): Glass Systems by Raman Spectroscopy: A New Look into Vyco; Galan Moore; Cameron Saunders; Corning Incorporated
Poster Board #30
(382) Study on Microcalcification Due to Cancer Cells in vitro by Raman Imaging; Anisa Maryani; Anggara Mahardika; Pakajiraporn Arunngam; Kartiawati Alipin; Bibin Bintang Andriana; Hidetoshi Sato; Kwansei Gakuin University; 2Padjadjaran University
Poster Board #31
(383) Detecting Glucose, Sucrose and Dextrose Levels by Means of Raman Spectroscopy, Support Vector Machine and Principal Component Analysis; Jorge Castro-Ramos; Freddy Narea-Jiménez; 2-3; Aaron Muñoz-Morales; 1-2; Pilar Gomez-Gil; Naara Gonzalez-Viveros; Juan Jaime Sánchez-Escobar; 2; Jacques Muñoz-López; 1Instituto Nacional de Astrofísica Óptica y Electrón; 2Centro de Investigaciones Médicas y Biotecnológica; 3Centro de Enseñanza Técnica Industrial
Poster Board #32
(384) Surface Enhanced, Spatially Offset Raman Spectroscopy for the in vivo Detection of Neurological
### Technical Program - Tuesday

**Posters Sessions & Coffee Breaks 11:00 AM - 12:00 PM & 3:10 - 3:50 PM, Exhibit Hall**

**Poster Board #33**
(385) A SERS-based Microdroplet Biosensor for Simultaneous Detection of Dual Prostate Cancer Markers; Zi Yi Cheng; Jaebum Choo; Hanyang University

**Poster Board #34**
(386) Highly Sensitive Detection of Multiple Mycotoxins Using Three-Dimensional Plasmonic Nanopillar Arrays; Joung-II Moon; Xiaokun Wang; Jaebum Choo; Hanyang University

**Poster Board #35**
(387) Sensing Post-Mortem Interval (PMI) Biomarkers by Spatially Offset Raman Spectroscopy; Alyssa Daniel; Bhavya Sharma; University of Tennessee, Knoxville

**Poster Board #36**
(388) Porous-Silicon-Oxide Coated Gold Disc-on-Pillar Arrays for the Detection of Gaseous Volatile Organic Compounds; T. Joshua Moore; Bhavya Sharma; The University of Tennessee, Knoxville

**Poster Board #37**
(389) Exploring Temporal Shifts in Nanofinger Hotspots with Trace Level Analytes Provides Evidence of Single Molecule-Surface Enhanced Raman Spectroscopy (SM-SERS); Milo Overbay; Steven J. Barcelo; Anita Rogaes; HP Labs

**Poster Board #38**
(390) Characterization of Extracellular Vesicles Derived from Red Blood Cells Using Raman Spectroscopy; Amarneshwari Konuthal; Rekha Gautam; Joo-Yeon Oh; University of Alabama Birmingham

**Poster Board #39**
(391) Characterization of Eye Layers Using Optical Coherence Tomography Guided Raman Spectroscopy; Rekha Gautam; Adithya Sivakumar; Dayna Eliz Every; Anthony Daniels; Anita Mahadevan-Jansen; Vanderbilt University

**Poster Board #40**
(392) Non-Invasive Cancer Imaging Using Surface Enhanced Resonance Raman Scattering Nanoparticles; Fay Nicolson; Chrysafis Andreou; Mortiz Kircher; Memorial Sloan Kettering Cancer Center

**Poster Board #41**
(393) in vivo Analysis of Preterm Birth Models Using Raman Spectroscopy to Investigate Infection-Mediated and Induced Preterm Birth; Jen Bateman; Jennifer Herington; Rekha Gautam; Christine O’Brien; Jeff Reese; Anita Mahadevan-Jansen; Vanderbilt University; Washington University

### Technical Program – Tuesday

**Orals 1:30 – 3:10 PM**

#### TUESDAY 1:30 PM - 3:10 PM Room L401

**18AES03: Microscale Electrokinetics and Electroporation**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 PM</td>
<td>HemeChip: An Automated Portable Microchip Electroosmosis Platform for Point-of-Care Diagnosis of Hemoglobin Disorders; Umut Gurkan; Muhammad Naman Hasan; Arwa Fraiwan; Case Western Reserve University</td>
</tr>
<tr>
<td>1:50 PM</td>
<td>Microfluidic Dielectrophoresis for Bacterial Cell Envelope Phenotyping; Cullen Buie; Qianru Wang; Hyunseok Kim; A.-Andrew Jones; Massachusetts Institute of Technology</td>
</tr>
<tr>
<td>2:10 PM</td>
<td>Dielectric Changes in Membrane Properties of Porcine Kidney Cells before and after Porcine Parvovirus Infection; Sanaz Habibi; Pratik Umesh Joshi; Yue Mi; Caryl L. Heldt; Adrienne R. Minerick; Michigan Technological University</td>
</tr>
<tr>
<td>2:30 PM</td>
<td>Modulation of the Blood-Brain Barrier by High Frequency Electric Fields Using a Microfluidic Model; Philip Graybil; Mohammad Bonakdar; Rafael Davalos; Virginia Tech; Helbling Precision Engineering, Cambridge, MA</td>
</tr>
<tr>
<td>2:50 PM</td>
<td>Numerical Study of the Effect of Electrokinetic Transport on Bacterial Electroporation; Jeffrey Moran; Naga Neehar Dingari; Paulo Garcia; Cullen Buie; George Mason University; Massachusetts Institute of Technology; Kytopen Corp.</td>
</tr>
</tbody>
</table>

#### TUESDAY 1:30 PM - 3:10 PM Room A706

**18ATOM03: Recent Developments in Atmospheric-Pressure Glow Discharge Sources for Elemental and Molecular Spectroscopy**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 PM</td>
<td>New Approaches for Elemental Mass Spectrometry of Non-Metals Using Atmospheric-Pressure Plasmas; Kaveh Jorabchi; Joseph Lesniewski; Kunyu Zheng; William McMahon; Hamid Badiei; Georgetown University; PerkinElmer Inc.</td>
</tr>
<tr>
<td>1:50 PM</td>
<td>Atmospheric Pressure Glow Discharge for the Analysis of Volatile Organic Compounds; Jonatan Fandino; Jaime Orejas; David Blanco; Jorge Pisonero; Philippe Guilot; Nerea Bordel; University of Oviedo; Department of Chemistry, State University of New York; Department of Construction and Manufacturing, Université de Toulouse</td>
</tr>
<tr>
<td>2:10 PM</td>
<td>Miniaturized Sample Introduction System for Flexible Tube µ-Plasma (FTµP) Ionization; Sebastian Brandl; Alexander Schütz; Michael Schilling; Carolin Drees; Felix David Klute; Joachim Franzke; ISAS</td>
</tr>
<tr>
<td>2:30 PM</td>
<td>Mass Spectrometry Imaging via Laser Ablation followed by halo-Flowing Atmospheric Pressure Afterglow Post-Ionization; Valerie A. Brückel; Michael Sperling; Uwe Karst; University of Muenster; European Virtual Institute for Speciation Analysis</td>
</tr>
<tr>
<td>2:50 PM</td>
<td>From Nuclear Safeguards to Proteins: Evaluating the Utility of the Liquid Sampling - Atmospheric Pressure Glow Discharge Ion Source; Edward Hoegg; R. Kenneth Marcus; Clemson University</td>
</tr>
</tbody>
</table>

---

Next year: October 13 - 18, 2019, Palm Springs, CA
**TECHNICAL PROGRAM – TUESDAY**

**ORALS 1:30 - 3:10 PM**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Chair/Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 PM</td>
<td>Room L508</td>
<td>18AW04: Mann Award - The Driving Forces Behind the Growth of Raman Spectroscopy</td>
<td>Chair: Andrew Whitley</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Room L506</td>
<td>18CTP04: Early Career Professional Development: A Mini-Workshop</td>
<td>Chair: Rebecca Aimeret</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Room L503</td>
<td>18FORENS02: Forensic Sciences</td>
<td>Chairs: Betsy Jean Yakes, Luis E. Rodriguez-Saona</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Room A707</td>
<td>18IR09: Advances in Molecular Spectroscopy</td>
<td>Chair: Curt Marcott</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Room A601</td>
<td>18LIBS04: LIBS 2018 - Archeology and Anthropology</td>
<td>Chairs: Matthieu Baudelet, Francois Doucet</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Room L508</td>
<td>18NANO04: Nanofacilitated Sensing</td>
<td>Chair: David E. Thompson</td>
</tr>
</tbody>
</table>

**TECHNICAL PROGRAM – TUESDAY**

**Room L508**

18AW04: Mann Award - The Driving Forces Behind the Growth of Raman Spectroscopy

Chair: Andrew Whitley

1:30 PM (404) 50 Years of Raman Instrumentation Development: Evolving from a Little Known Technique to a Critical Analytical Tool; Bernard Roussel; Fran Adar; HORIBA Scientific

1:50 PM (405) Enabling Raman - Lasers, Filters and New Possibilities; Scott Rudder: Innovative Photonic Solutions

2:10 PM (406) The Dominant Applications Drivers for Raman Spectroscopy Growth; Bridget O'Donnell; HORIBA Scientific

2:30 PM (407) Optical Biopsies via Multicontrast Imaging; Juergen Popp; Leibniz Institute of Photonic Technology; Friedrich Schiller University Jena

2:50 PM (408) Pondering the Future of Raman Spectroscopy by Reflecting on the Past; Brian Marquardt; Mike Carrabba; MarqMetrix Inc; Rogue Spectroscopy LLC

**Room L506**

18CTP04: Early Career Professional Development: A Mini-Workshop

Chair: Rebecca Aimeret

1:30 PM (409) Common Mistakes in Reporting Scientific Results; Peter Harrington; OHIO CICI

1:50 PM (410) Better Dead than TED: How to Give a Compelling Talk in the Post-TED Era; Fred Laplant; 3M Inc

2:10 PM (411) Poster Presentations: How to Make or Break Your Career through Graphic Arts; Alexander Scheeline; University of Illinois at Urbana-Champaign

2:30 PM (412) Exit Strategies and Career Trajectories: Preparing for Your Future before It Arrives; Anthony Stender; Ohio University

2:50 PM (413) Speaker Roundtable for CTP04

**Room L503**

18FORENS02: Forensic Sciences

Chairs: Betsy Jean Yakes, Luis E. Rodriguez-Saona

1:30 PM (414) Tricorder Goal: Searching for a Multifunctional, Hand-Held, Spectroscopic Device; Betsy Jean Yakes; Sanjeeva R. Karunathilaka; Cynthia T. Srigley; Sung Hwan Choi; Kyungeun Lee; Magdi Mossoba; U.S Food and Drug Administration

1:50 PM (415) Authentication of Botanical Supplements; James Harms; Jianguo Sun; Ping Geng; US Department of Agriculture

2:10 PM (416) OLEUM Project towards the Quantitative Panel Test: Sensory Aspects and Volatiles Quantitation; Tullia Gallina Toschi; Alma Mater Studiorum - University of Bologna

2:30 PM (417) Food Sensor Technology - Revolutionizing Decision Making for Quality Assurance and Safety; Luis Rodriguez-Saona; The Ohio State University

2:50 PM (418) Enhanced Food Authentication with Data Fusion Processes; Tony Lemos; John H. Kalivas; Idaho State University

**Room L508**

18AW04: Mann Award - The Driving Forces Behind the Growth of Raman Spectroscopy

Chair: Andrew Whitley

1:30 PM (419) Molecular Crystal Spectral Standards for Terahertz Spectroscopy; Sara Dampf; Timothy Korter; Syracuse University

1:50 PM (420) THz Nano-Spectroscopy with 25 nm Spatial and 10 fs Time Resolution; Max Eisele; Tobias Gokus; Sergiu Amarie; neaspec GmbH

2:10 PM (421) Simultaneous Second Harmonic Generation and Two Photon Fluorescence Time-lapse Imaging for Probing Bacterial Membrane Dynamics; Limbey Miller; Tessa Calhoun; University of Tennessee, Knoxville

2:30 PM (422) Unexpected Doublet Peak in Si-H Stretch Region; Xianghui Wang; Xiaoyun Chen; Mary Johnson; Zhanjie Li; The Dow Chemical Company

2:50 PM (423) Measurement of Multiple Spectral Ranges with a Single Instrument; Sergey Shilov; Bruker Optics

**Room L506**

18CTP04: Early Career Professional Development: A Mini-Workshop

Chair: Rebecca Aimeret

1:30 PM (424) Multi-Elemental Hydroxyapatite Standards for Quantitative Analysis of Anthropological Samples by LIBS; Matthieu Baudelet; Mauro Martine; NCFS - University of Central Florida; Chemistry - University of Central Florida

1:50 PM (425) Phasing of Terraced Walls at a Roman Archaeological Site Using Portable LIBS; Mary Kate Donais; Luke Douglass; David B. George; Saint Anselm College Chemistry Department; Saint Anselm College Classics Department

2:10 PM (426) Laser-Induced Breakdown Spectroscopy (LIBS) An Emerging Tool for Archaeological Studies: Discriminating Volcanic Regions and Centers Using Multivariate Statistical Analysis of LIBS Spectral Signatures; Russell S. Harmon; Chandra S. Throckmorton; Richard R. Hark; Jennifer L. Gottfried; Leslie Collins; North Carolina State University; Duke University; Jnunia College; Army Research Laboratory

2:30 PM (427) Integrated Laser Sensor (ILS) for Characterization and Extended Mapping of Remote Targets; Violeta Lazic; Antonio Palucci; Marcello Nuvoli; Marco Pistilli; Ivano Menicucci; Francesco Colao; Luigi De Dominicis; Salvatore Almaviva; ENEA

2:50 PM (428) Informal STEM Education through a Science Museum Using Optics and Spectroscopy; Prasoon Diwakar; Heidi Perez; Melissa Fernandez; Alexis Floback; Nathalie Manzano; Theodore Capow; Frost Science Museum; Grayscale Partners

**Room L503**

18FORENS02: Forensic Sciences

Chairs: Betsy Jean Yakes, Luis E. Rodriguez-Saona

1:30 PM (429) An Analytical Strategy to Evaluate and Optimize Antibody-Gold Nanoparticle Conjugation Chemistry; Jeremy Driskell; Guadalupe Ruiz; Kiran Tripathi; Illinois State University

1:50 PM (430) in situ Application of Nanoparticles in Polymer-Modified Lateral Flow Membranes and Surface-
TECHNICAL PROGRAM - TUESDAY
ORALS 1:30 - 3:10 PM

Enhanced Raman Substrates; Jing Zhao; Julie Jenkins; Yi Luo; Huixiang Wu; Yu Lei; University of Connecticut

2:10 PM (431) Polyydacylene-Embedded Force-spun Nanofibers for Meat Spoilage Assessment; Yuanbing Mao; University of Texas Rio Grande Valley

2:30 PM (432) Viewing Surface Enhanced Raman Spectroscopy through the Lens of Thermodynamics; Ashish Tripathi; Erik D. Emmons; Augustus W. Fountain ii; Steven D. Christensen; Jason A. Guicheteau; US Army RDECOM ECBC

2:50 PM (433) Effect of Substituents on Surface Equilibria of Thiophenols and Isoquinolines on Gold Substrates Studied Using Surface-Enhanced Raman Spectroscopy; Erik Emmons; Ashish Tripathi; Augustus Fountain; Jason Guicheteau; U.S. Army Edgewood Chemical Biological Center

TUESDAY 1:30 PM - 3:10 PM Room L504
18PAT04: Online Analysis of Industrial Processes and Reactions
Chairs: Anna Sandlin, JD Tate

1:30 PM (434) On-line Sample Conditioning Systems for Measurements in both R&D and Manufacturing; Eric Schmidt; Louise Mahoney; Anna Sandlin; The Dow Chemical Company

1:50 PM (435) Hyperspectral Imaging for Emissions Monitoring and Leak Detection; Robert Kester; Rebellion Photonics, Inc.

2:10 PM (436) Real-Time Analysis of Stack Gases; Koji Ishikawa; Frank Dethomas; Satoshi Inoue; Greg Anderson; HORIBA Instruments Inc.

2:30 PM (437) Quantification of Sulfur and Nitrogen Species in Aromatics Process Streams Using a Novel Technique; Ganesh Bhat; Dr. Wenjie Cao; Asad Naqvi; SABIC Ti&I

2:50 PM (438) Process Monitoring of Heavy Metals: Spectrophotometric Characterization of Novel Chemosensor Dyes; Joseph T. Labeots; Garrett B. Finn; Joseph H. Aldstadt; University of Wisconsin-Milwaukee

TUESDAY 1:30 PM - 3:10 PM Room A704
18PMA04: Contributed Pharmaceutical Analysis
Chairs: Anna Luczak, John Wasylyk

1:30 PM (439) An Osmolyte Mediated Non-Functionalized Route for Improved Nanoparticle Transport and Cellular Probing; Soumik Siddhanta; Sourav Bhattacharjee; Ishan Barman; Johns Hopkins University; 2University College Dublin; 3Johns Hopkins University School of Medicine

1:50 PM (440) Correcting Inner Filter Effects in Fluorescence Spectroscopy; Carl Emil Eskildsen; Tormod Næs; Jens Petter Wold; Nofima AS

2:10 PM (441) Using Vibrational Spectroscopy to Identify Post-translational Modifications and Degradation in IgG1, IgG4 and Fab Therapeutics; Bethan Mcavan; Leo Bowsher; Mariangela Spitali; John O'Hara; Royston Goodacre; Andrew Doig; University of Manchester; UCB Pharma

2:30 PM (442) UV Resonance Raman Spectroscopy as a Conformational Probe in Disordered Peptides; Bridgette Barry; Tyler Mccaslin; Cynthia Pagba; Georgia Institute of Technology

2:50 PM (443) Use of Automated Down-Select Principal Components Analysis for Maximizing Discrimination Between Various Classes of Peptide-Based Biomolecules Using Raman Spectral Data; Philip Wilcox; Joseph Danford; Rabih Jabbour; Waleed Maswadeh; Richard Vanderbeek; Erik Emmons; Jason Guicheteau; Ashish Tripathi; US Army, ECBC

TUESDAY 1:30 PM - 3:10 PM Room A703
18SPECIAL07: Past, Present and Future: Celebrating 60 Years of SAS and Spectroscopy Innovations
Chairs: Mike Blades, Greg Klunder

1:30 PM (444) Is Mid-Infrared Spectroscopy on its Death Bed?; Peter Griffiths; Griffiths Consulting LLC

1:50 PM (445) Biomedical Applications of Infrared Spectroscopy; Rohith Reddy; University of Houston

2:10 PM (446) Developments in Fluorescence Spectroscopy; Frank Bright; UB, SUNY

2:30 PM (447) Photophysical Properties of Ionic Materials; Norea Siraj; University of Arkansas at Little Rock

2:50 PM (448) Speaker Roundtable: What Will the Next 60 Years of Spectroscopy Bring?

TUESDAY 1:30 PM - 3:10 PM Room L505
18SPR03: Sensing with Plasmonics
Chairs: Amanda Haes, Jean-Francois Masson

1:30 PM (449) Non-Invasive Analysis of Hemolysis Using Diffuse Resonance Raman Spectroscopy; Richard Duby; Rekha Gautham; Amareashwari Knouthoum; Joo-Yeun Oh; Rakesh Patel; University of Alabama at Birmingham

1:50 PM (450) Plasmonic Sensors for Disease Diagnosis; Bhavya Sharma; University of Tennessee

2:10 PM (451) Improved Surface Enhanced Raman Spectroscopy (SERS) Substrates Using Liposome Scaffolds; Laura Sagle; William Lumi; Ian Bruzas; Zorhe Gorunmez; 1University of Cincinnati; 2University of Cincinnati, Physics Department

2:30 PM (452) Ultrasensitive Liquid Biopsy of Circulating microRNAs Using A Nanoplasmonic Sensor; Rajesh Sardar; Indiana Univ-Purdue Univ Indianapolis

2:50 PM (453) Molecular Recognition of Muramyl Dipeptide Occurs in the Leucine-rich Repeat Domain of Nod2; Mackenzie Lauro; Brian Bahnsen; Catherine Grimes; Merck & Co.; University of Delaware
### TECHNICAL PROGRAM - TUESDAY
#### ORALS 3:50 - 5:30 PM

**TUESDAY 3:50 PM - 5:30 PM Room L401**

**18AES05: Electrophoresis In Industry and In Teaching I**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:50 PM</td>
<td>(454)</td>
<td>Electrokineitis and Investment: The Equation for Capital Fundraising</td>
<td>David Charlot, Christopher Harrison</td>
</tr>
</tbody>
</table>

4:10 PM (455) Commercialization of Novel Technologies: Leslie Ivie

4:30 PM (456) Training the Next Generation of capillary electrophoresis users and experts: Christopher Harrison, San Diego State University

5:10 PM (457) Electrophoresis Using an iPad-Based Brownian Dynamics Simulator: Victor Ugas, Sourav Bandyopadhyay, Nan Shi, Texas A&M University

5:10 PM (458) AES Electrophoresis Society: Land of Opportunities: Rodrigo Martinez-Duarte, AES Electrophoresis Society

---

**TUESDAY 3:50 PM - 5:30 PM Room A706**

**18ATOM08: Solving Challenging Applications With ICP-MS**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:50 PM</td>
<td>(459)</td>
<td>High-Precision Metal Isotopic Analysis in a Clinical Context</td>
<td>Marta Costas Rodriguez, Sara Lauwen, Maria Del Rosario Florez, Agustina A.M.B. Hastuti, Lindsey Devisscher, Hans Van Vlierberghoe, Frank Vanhanec, Ghent University, Ghent University Hospital</td>
</tr>
</tbody>
</table>

4:10 PM (460) Advantages of Inline Dilution on LC-ICP-MS Based Applications: C. Derrick Quarles Jr., Patrick Sullivan, M. Paul Field, Daniel R. Wiederin, Elemental Scientific, Inc.

4:30 PM (461) Natural Isotopic Variation of Titanium in Industrially Used TiO2-Nanoparticles Assessed by (FFF) - MC ICP-MS: Johanna Irrogheger, Florian Dutschke, Daniel Pröfrock, Helmholtz-Centre Geesthacht

4:50 PM (462) Beyond Impurities for Elemental Analyses in Pharmaceutical Research: Brittany Kassim, Lanfang Zou, Qiang Tu, Xiaodong Bu, Erck & Co.

5:10 PM (463) The Employment of ICP-MS for the Analysis of Nuclear Materials: Benjamin T. Manard, Los Alamos National Laboratory

---

**TUESDAY 3:50 PM - 5:50 PM Room L058**

**18AWDH01: William F. Meggers Award Symposium**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:50 PM</td>
<td>(464)</td>
<td>Identifying Minerals and Polymorphs by Hysperspectral Raman Imaging in Meteorites, Meteorite Impacts, and Cultural Heritage Objects</td>
<td>Karl Booksh, Joseph Smith, Frank Smith, Marcie Wiggins, Jocelyn Alcantara-Garcia, University of Delaware</td>
</tr>
</tbody>
</table>

4:10 PM (465) Raman at 2200 m Below Sea Level: Challenges and Opportunities: Brian Marquardt, MarqMetrix Inc.

4:30 PM (466) A Permanent Emplacement Carbon Dioxide Optical Sensor for Harsh Subterranean Environments: M.L. Myrick, Christopher Jones, Bin Dai, Megan Peir, Ralph Piza, Alexandre Vierina, Luis Sacorague, Helen Gomes Maria de Aguilar, Juliana Midori Matsushita, Liniker Sousa, University of South Carolina, Halliburton Energy Services, Petrobras, Brazil, Halliburton Energy Services, Brazil

---

**TUESDAY 4:50 PM - 6:30 PM Room L058**

**18CHEM06: Something Old, Something New, Something Borrowed...**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:50 PM</td>
<td>(470)</td>
<td>Particle Swarm Optimization (PSO) in Chemometrics: An Overview</td>
<td>Federico Marini, Beata Walczak, University of Rome La Sapienza, University of Silesia</td>
</tr>
</tbody>
</table>

4:10 PM (471) Randomised SIMPLISMA: Making Rank Estimation and Initial Guess Generation Easier: Ludovic Duponchel, University of Lille


5:10 PM (474) Speaker Roundtable for 18CHEM06

---

**TUESDAY 3:50 PM - 5:30 PM Room L506**

**18CTP05: Analytical Chemists Embracing Sustainability: Open Source Instrumentation**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:50 PM</td>
<td>(475)</td>
<td>Introduction to Open Source Analytical Sciences</td>
<td>Francis Esmonde-White, Esmonde-White Technologies, LLC</td>
</tr>
</tbody>
</table>

4:10 PM (476) Open Source Tools for Water Analyses | Rebecca Lahr, Michigan State University


4:50 PM (478) Intrinsic Standards in Raman Spectroscopy | Aaron Urban, National Institute of Standards and Technology

5:10 PM (479) Automated, Cost-Effective Fecal Parasite Diagnosis Using Open Source Microscopy and Deep Learning | Zachary Smith, Yaning Li, Rui Zheng, Yizhen Wu, Kaiqing Chu, Mingzhi Sun, Qianming Xu, Anhui Agricultural University
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Room</th>
<th>Chair</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:50 PM (480)</td>
<td>Laser Frequency Combs in the Molecular Fingerprint Region: Generation and Spectroscopic Applications; Scott Diddams¹,²; ¹University of Colorado at Boulder; ²National Institute of Standards and Technology</td>
<td>A707</td>
<td>Rohith Reddy</td>
<td>Palm Springs, CA</td>
</tr>
<tr>
<td>4:10 PM</td>
<td>Advanced Infrared Nanospectroscopy Using Photothermal Induced Resonance Technique; Ariane Deniset-Bessey; University Paris-Sud</td>
<td>L507</td>
<td>Facundo Fernandez</td>
<td></td>
</tr>
<tr>
<td>4:50 PM (483)</td>
<td>Advances in Dual-Comb Spectroscopy and Applications to Open-Path Sensing; Nathan Newbury; Ian Coddington; Kevin Cossel; Fabrizio Giorgetta; Daniel Herman; Eleanor waxman; Gabriel Ycas; Sean Coburn; Gregory Riekere; Robert Wright⁴; ¹National Institute of Standards and Technology; ²University of Colorado</td>
<td>A601</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:10 PM</td>
<td>Measurement of 2D Coherence Factor of Infrared Light Sources and its Application in Diffraction; Ghazal Azarfar; Nick waltes; Sugato Ray; Alex Schofield; Zahra Alavi; Reinhold Blumen; Achim Kohler; Sarah Patch; Carol Hirchmugl; ¹University of Wisconsin Milwaukee; ²Wesleyan University; ³Norwegian University of Life Sciences</td>
<td>A601</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:50 PM (485)</td>
<td>Developments in Forensic and Security Applications of LIBS; Jose Almirall; Florida International University</td>
<td>L504</td>
<td>Alison Nordon</td>
<td></td>
</tr>
<tr>
<td>4:10 PM</td>
<td>LIBS Applied to Uranium Ore Concentrates for Rapid Field-Deployable Origin Assessment to support Nuclear Forensic Applications; Josette El Haddad; Aissa Harhira; André Hamel; Mohammad Sabsabi; Alain Blouin; Ali El-Jaby; ¹National Research Council Canada; ²Canadian Nuclear Safety Commission</td>
<td>A504</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:50 PM (487)</td>
<td>Uranium Isotopic Analysis with Laser-induced Plasma; George Chang; Xianglei Mao; Vassilia Zorba; Richard Russo; Lawrence Berkeley National Laboratory</td>
<td>A504</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:50 PM (488)</td>
<td>Standoff Detection of Bulk and Trace Elements Using Laser Induced Fluorescence of LIBS Plumes; Mark Phillips; Brian Brumfield; Sivanandan Harilal; Pacific Northwest National Laboratory</td>
<td>A504</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:10 PM (489)</td>
<td>Microchip-Laser Induced Breakdown Spectroscopy for Remote Analysis of Severe Accident Reactor: Measurements of Radiation Dose Rate Effects; Koji Tamura; Hironori Ohba; Morihisa Saeki; Tomitsugu Taguchi; Hwan Hong Lim; Takunori Taira; Ikuo Wakiida; QST; Japan Atomic Energy Agency; ¹National Institutes of Natural Sciences</td>
<td>A704</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:50 PM (490)</td>
<td>Trace-Sensitive Capillary Electrophoresis ElectrospRAY Ionization for Single-Cell Mass Spectrometry; Peter Nemes; Erika Porter; Camille Lombard-Banek; Sally Moody; ¹University of Maryland, College Park, MD; ²George Washington University</td>
<td>L504</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:10 PM (491)</td>
<td>Plasmas as Ionization and Fragmentation Tools for Small Molecule and Biopolymer Detection, Identification; Jacob Shelley; Andrew Schwartz; Courtney Walton; Judy Wu; Michela Burnley; Gary Hieftje; ¹Rensselaer Polytechnic Institute; ²State University of New York at Buffalo; ³Indiana University</td>
<td>A504</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:30 PM (492)</td>
<td>Discovery and Implementation of Novel Ionization Processes for Mass Spectrometry; Sarah Trimpin; Wayne State University</td>
<td>L504</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:50 PM (493)</td>
<td>Deep Ultraviolet Laser Ablation Electrospray Ionization Mass Spectrometry; Kermit K. Murray; Remi Lawal; Fabrizio Donnarumma; Louisiana State University</td>
<td>A504</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:10 PM (494)</td>
<td>Pulsed Triboelectric Nanospray Ionization for Prebiotic Mixture Analysis; Marcos Bouza Areces; Anyin Li; Anton Petrov; Zhong L. Wang; Facundo M. Fernández; ¹Georgia Institute of Technology; ²Beijing Institute of Nanoenergy and Nanosystems</td>
<td>A504</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:50 PM (495)</td>
<td>De-noising, Compression and Data Fusion: New Approaches for Automatically Managing and Processing Hyperspectral Imaging; Puneet Mishra; University of Strathclyde</td>
<td>L504</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:10 PM (496)</td>
<td>Advances of Model-Based Data Evaluation Concepts for Quantitative Online NMR Spectroscopy; Simon Kern; Martin Bornemann; Svetlana Guhl; Klas Meyer; Lukas Wander; Andrea Paul; Michael Maiwald; Bundesanstalt für Materialforschung und -prüfung</td>
<td>A504</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:30 PM (497)</td>
<td>In Situ High Speed NIR Imaging to Monitor Form Change and Drug Release from Rapidly Disintegrating Tablets; Patrick Wray; Lucy Hawarden; Khezia Assamoah; Andrew Dennis; Bristol-Myers Squibb</td>
<td>A504</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4:50 PM (498)</td>
<td>Development of Off-Line/In-Line NIR Spectroscopic Method for Continuous Pharmaceutical Manufacturing; Xuyiing Zhai; Shikhar Mohan; James Drennen; Carl Anderson; Duquesne University</td>
<td>A504</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:10 PM (499)</td>
<td>Raman Gas Measurements Using a Spatial Heterodyne Spectrometer for Process Control of Saltstone Storage; A. Alicia Strange Fessler; Robert Lascola; Patrick O’Rourke; Steven Serkiz; S. Michael Angel; ¹Savannah River National Laboratory; ²University of South Carolina</td>
<td>A504</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3:50 PM (500)</td>
<td>Metabolomic Characterization of a Bacterial Biosensor for Low-Resource Applications; Mark Styczynski; April Miguez; Monica Menerney; Georgia Institute of Technology</td>
<td>A704</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4:10 PM (501) Model-Based Strain Design for the Production of Small Molecules; Ruhi Choudhary; Shyam Srinivasan; Radhakrishnan Mahadevan; Radhakrishnan Mahadevan; University of Toronto

5:10 PM (509) Bright-Field Segmentation and Registration to Raman Hyperspectral Images for Single Spore Analysis; Phillip Wilcox1, 2; Ashish Tripathi1; Michael Kim1; Jin Kang2; *US Army Edgewood Chemical Biological Center; 2 Johns Hopkins University

4:30 PM (502) Test at SYNBIOCHEM: An Overview of Analytical Technologies and Approaches; Katherine Hollywood1, 2, 3; Cunyu Yan1, 2, 3; Nigel Scrutton1, 2, 3; Perdita Barran1, 2, 3; Roy Goodacre1, 2, 3; *SYNBIOCHEM; 1Univ. of Manchester; 2Manchester Inst. of Biotechnology

5:10 PM (504) An Integrated Benchtop Microchip CE-MS Platform for the Analysis of Cell Growth Media; Glenn Harris; Kenion Blakeman; Drew Blouch; Colin Gavin; Erin Redman; Scott Mellors; Chris Brown; 908 Devices.

5:10 PM Withdrawn
**TECHNICAL PROGRAM - WEDNESDAY**

**Award Presentations 7:45 am; Plenary Lectures 8:00 am, Imperial A**

**Chair: Garth Simpson**

8:00 AM (515) Spectroscopy’s Emerging Leader In Molecular Spectroscopy Award; Residue-Specific Dynamics of Protein Molecular Recognition via 2D IR Spectroscopy

Megan Thielges  
*Indiana University*

8:30 AM (516) AES Electrophoresis Mid Career Award; Electrophoretic Methods for Investigating Dynamic Behavior of Pancreatic Cells

Michael Roper  
*Florida State University*

---

**WEDNESDAY 9:15 AM - 10:55 AM Room L401**

**18AES06: ACS-AES Joint Session: Electric Fields and Microbioanalysis**

Chairs: Lane Baker, Mark A. Hayes

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:15 AM (517)</td>
<td>Ferrohydrodynamic Separation of Circulating Tumor Cells; Leidong Ma; University of Georgia</td>
</tr>
<tr>
<td>9:35 AM (518)</td>
<td>Controlled Oxidation as Sample Pretreatment; Carlos García¹; Thiago Gomes-Cordeiro²; Mauro Sérgio Ferreira Santos³; Ivan Gebhardt Gutz⁴; ¹Clemson University; ²Departamento de Química Fundamental, Instituto de la Salle; ³University of Florida</td>
</tr>
<tr>
<td>9:55 AM (519)</td>
<td>High Resolution Temporal Sampling of Endocrine Tissue Dynamics Using Droplet Microfluidics with Integrated, Mix-and-Read Assays; Christopher Easley; Juan Hu; Xiangpeng Li; Nan Shi; Auburn University</td>
</tr>
<tr>
<td>10:15 AM (520)</td>
<td>Nanofluidic Measurements of Surface Charge; Lane Baker; Indiana University</td>
</tr>
<tr>
<td>10:35 AM (521)</td>
<td>Electrical and Microfluidic Circuits for Cellular Applications; Shuichi Takayama; Georgia Institute of Technology</td>
</tr>
</tbody>
</table>

---

**WEDNESDAY 9:15 AM - 10:55 AM Room A706**

**18ATOM09: Sophisticated Quantitative Analytical Applications with ICP-MS**

Chair: R. Steven Pappas

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:15 AM (522)</td>
<td>Gas-Phase Separations of Lanthanide Compounds with Subsequent Detection with ICP-TOF-MS; John Auxier II; Colton Oldham; Austin Mullen; Howard Hall; University of Tennessee</td>
</tr>
<tr>
<td>9:35 AM (523)</td>
<td>Applications with Electrothermal Vaporization-Single Quad and Triple Quad-ICP-MS; R Steven Pappas; Centers for Disease Control and Prevention</td>
</tr>
<tr>
<td>9:55 AM (524)</td>
<td>Use of an Automated Method to Measure Bromine, Chlorine and Iodine Speciation and Total Metals Content in Drinking Water Using a Single Platform Instrument; Ronald Smith¹; ²; Paula Nolitos¹; Daniel Jones²; C. Derrick Quarles Jr³; ¹University of North Georgia; ²Perkin Elmer; ³Elemental Scientific, Inc.</td>
</tr>
<tr>
<td>10:15 AM (525)</td>
<td>Cell Number Counting and Cellular Mass Quantification by Flow Cytometry – Single Cell Icp-Ms Opens up the Opportunity for Fast Cell Analysis; Chady Stephan; Ruth Merrifield; Dan Jones; PerkinElmer</td>
</tr>
<tr>
<td>10:35 AM (526)</td>
<td>Simultaneous Detection of Organic and Inorganic Firearm Discharge Residue Using HPLC-QQQ and Host-Guest Chemistry; William Feehey; Suzanne Bell; West Virginia University</td>
</tr>
</tbody>
</table>

---

**WEDNESDAY 9:15 AM - 10:55 AM Room L508**

**18AWD08: Spectroscopy's Emerging Leader in Molecular Spectroscopy Award Symposium Honoring Megan Thielges**

Chair: Megan Thielges

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:15 AM (527)</td>
<td>Membrane Protein Folding Dynamics; Brian Dyer; Emory University</td>
</tr>
<tr>
<td>9:35 AM (528)</td>
<td>Transient Absorption Microscopy for Imaging Drug-Cell Interactions; Tessa Calhoun; Kevin Higgins; Brandon Woitas; University of Tennessee, Knoxville</td>
</tr>
<tr>
<td>9:55 AM (529)</td>
<td>Two-Dimensional Electronic Spectroscopy of Photosystem I and BODIPY Based Chromophores; Jessica Anna; University of Pennsylvania</td>
</tr>
<tr>
<td>10:15 AM (530)</td>
<td>Probing the Vibrational Structure of the Protein Backbone Using Site-Selectively Incorporated IR Probes; Floyd Ronesberg; The Scripps Research Institute</td>
</tr>
<tr>
<td>10:35 AM (531)</td>
<td>Conformational Dynamics and Regulation of Aurora a Kinase Activity; Nick Levinson¹; Emily Ruff²; Joseph Muretta¹; Andrew Thompson³; Eric Lake¹; Steven Albanese²; David Thomas¹; John Chodera³; ¹University of Minnesota; ²Memorial Sloan Kettering Cancer Center</td>
</tr>
</tbody>
</table>

---

**WEDNESDAY 9:15 AM - 10:55 AM Room L506**

**18BIM01: Infectious Diseases: the Unmet Medical Need**

Chair: Susanne Pahlow

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:35 AM (533)</td>
<td>Antimicrobial Resistance: The Asian Perspective; Margaret Ip; Chinese University of Hong Kong</td>
</tr>
<tr>
<td>9:55 AM (534)</td>
<td>Detection by Death: A Rapid Way to Detect Viable Microbes with Slow Metabolisms (Long Doubling Times); Shramik Sengupta; Roli Kargupta; Yongqiang Yang; Aiden Lee; Sachidevi Puttaswamy; University of Missouri</td>
</tr>
<tr>
<td>10:15 AM (535)</td>
<td>Using X-Ray Excited Luminescent Chemical Imaging (XELCI) to Image Changes in pH on the Surface of Implanted Medical Devices in order to Detect and Monitor Implant-Associated Infection.; Unai Azar; Jeffrey Anker; Clemson University</td>
</tr>
<tr>
<td>10:35 AM (536)</td>
<td>Point of Care Sensing with Localized Surface Plasmon Resonance on Flexible Plastic Substrates; Rejeena Carvyl; Jie He; Jamison Reifsteck; Jorge Chavez; Laura Sage; ¹University of Cincinnati; ²Wright-Patterson Air Force Base</td>
</tr>
</tbody>
</table>

---
WEDNESDAY 9:15 AM - 10:55 AM
Room L503
18CHEM03: Chemometric Opportunities in the Forensic Sciences
Chair: Mengliang Zhang
9:15 AM (537) Multivariate Classification of Compounds in Ignitable Liquids Based on the Compressed Mass Spectra; Mengliang Zhang; Isabella Barnett; Middle Tennessee State University
9:35 AM (538) Classification of Powder Heroin Samples Using Elemental and Strontium Isotope Ratio Data; Sarah C. Jantz; Joshua Debord; Ali Pourmand; Sini Panicker; Jose Almirall; TEAF, IFRI, Florida International University; IFRI, Florida International University; Dept. of Marine Geosciences, University of Miami; Special Testing & Research Laboratory, US DEA
9:55 AM (539) Development and Application of Multivariate Statistical Models for Designer Drug Classification; Ruth Smith; Amanda Setser; Michigan State University
10:15 AM (540) Deep Learning-Based Workflow for Identification of Psychoactive Plant Types Featuring a Direct Analysis in Real-Time Mass Spectrometry Database; Samira Bevranyasoltan; Nana-Hawwa Abdul-Rahman; Rabbi Am Musah; State University of New York (SUNY) at Albany
10:35 AM (541) Classification of Spectra from Textile Fibers with Sparse Modeling and Spike and Slab Variable Selection; Stephen Morgan; Edsel Pena; University of South Carolina

WEDNESDAY 9:15 AM - 10:55 AM
Room A707
18IR07: Point-of-Care Testing with Spontaneous and Surface-Enhanced Raman Spectroscopies
Chairs: Ishan Barman, Soumik Siddhanta
9:15 AM (542) Next Generation Carbon Dots for Multiscale Imaging Application; Dipanjan Pan; Fatemeh Ostadhossein; Indrajit Srivastava; Parinaz Fathi; Santosh Misra; University of Illinois at Urbana Champaign
9:35 AM (543) Detection of Chronic Kidney Disease and Bladder Cancer Using Raman Chemometrics (Rametrix™); Ryan Senger; John Robertson; Virginia Tech; DialySensors, Inc.
9:55 AM (544) Lipid-Based Plasmonic Materials for Biocompatible Surface Enhanced Raman Spectroscopy (SERS); Laura Sagle; William Lum; Ian Bruzas; Zohre Gorunmez; University of Cincinnati; University of California-Irvine
10:15 AM (545) Flexible Sensors Formed from Free-Standing Citrate-Capped Gold and Silver Nanoparticle Films; Jennifer Shumaker-Parry; Lindsey Beecher; John Houlihan; V. Ara Apkarian; University of Utah; University of California-Irvine
10:35 AM (546) An Integrated Label-Free Morphomolecular Imaging Platform for Acute Lymphoblastic Leukemia Diagnosis; Rishikesh Pandey; University of Connecticut School of Medicine

WEDNESDAY 9:15 AM - 10:55 AM
Room A601
18LIBS08: LIBS 2018 - Instrumentation Development
Chairs: Matthieu Baudelot, Francois Doucet
9:15 AM (547) Next Generation LIBS Using a Low Cost CMOS Camera and High Throughput Echelle Spectrometer; Marijn Sandtke; Ad Maas; SPECTRAL Industries
9:35 AM (548) Spectral Unmixing in the Framework of LIBS Imaging; Ludovic Dunopneh; Vincent Motto; University of Lille; Institut Lumière Matière, Université de Lyon
9:55 AM (549) Ultrashort Pulse LIBS for Chemical Speciation during Solid Propellant Combustion; Waruna Kulatilaka; Texas A&M University
10:15 AM (550) Advances in LIBS Instrumentations and Emerging Mining Applications; Mohamad Sababbi; Paul Bouchard; Assia Harchira; Elton Soares de Lima Filho; Josette El Haddad; Francis Vanier; Alain Blouin; National Research Council Canada
10:35 AM (551) Plasma Reheating in LIBS with Electric Discharge to Detect Halogens in Low Concentrations; Tobias Güntther; Cassian Gottlieb; Tobias Völker; Steven Millar; Gerd Wilsch; B.A.M, Federal Institute for Materials Research

WEDNESDAY 9:15 AM - 10:55 AM
Room L504
18MASS01: Native Mass Spectrometry
Chair: Jon Amster
9:15 AM (552) Top-Down Mass Spectrometry Au Naturel: A Tool for Structural Biology; Joseph Loo; University of California, Los Angeles
9:35 AM (553) Collision Induced Unfolding of Proteins and Protein Complexes: From Mechanism to Application; Brandon Ruotolo; University of Michigan
9:55 AM (554) New Developments in Native nESI-TIMS-MS; Francisco Fernandez-Lima; Alyssa Garabedian; Juan Camilo Molano-Arvalo; Kevin Jeanne Dit Fouque; Mark E Ridgeway; Melvin A Park; Florida International University; Bruker Daltonics
10:15 AM (555) Traveling Wave Ion Mobility Spectrometry Reveals a New, Biologically Relevant, Conformation of Robo1 Not Observed by X-ray Diffraction; Jonathan Amster; University of Georgia
10:35 AM (556) Analytical Scale SEC - MS for Robust Native Protein Characterization; Henry Shion; Dale Cooper-Shepherd; Jonathan Williams; Maria Basanta-Sanchez; Waters Corporation

WEDNESDAY 9:15 AM - 10:55 AM
Room L507
18NANO01: Combining Light and Electrochemistry in Nanostructures (I)
Chairs: Gangli Wang, Wei Zhao
9:15 AM (557) Electrochemical Zero-Mode Waveguide Studies of Single Molecules and Single Catalyst Particles; Paul Bohn; Donghoon Han; Garrison Crouch; Seung-Ryong Kwon; Kaiyu Fu; University of Notre Dame
Schorr; Annie Jiang; University of Illinois at Urbana-Champaign

9:55 AM (559) Growth of a Single Crystal Controlled by Nanoscale Mass Transport; Gangli Wang; Maksim Kvetny; Georgia State University

10:15 AM (560) Triboelectric Nanogenerators for Sustainable Energy Harvesting, Self-Powered Devices and Active Sensing; Aurelia Wang; Zhong Lin Wang; Georgia Institute of Technology

10:35 AM (561) Combined Scanning Probe Microscopy with Mid-IR Spectroelectrochemistry; Christine Kranz1; Javier Izquierdo2; Boris Mizaiikoff1; 1Ulm University; 2University of La Laguna

9:15 AM (562) Development of ‘Fit-for-Purpose’ Near Infrared Spectroscopic Methods for Lyophilized Biopharmaceuticals; John Waslylk1; Eva Kowalczzyk; Mary Krause1; Robert Wethman1; Ming Huang1; 1Bristol-Myers Squibb Co.; 2Seton Hall University

9:35 AM (563) Applications of Handheld Raman Truscan RM in Biopharmaceutical Manufacturing; Robert Brush; Thermo Scientific

9:55 AM (564) Extracting Pure Absorbance Spectra in Infrared Microscopy by Modeling Absorption Bands as Fano Resonances; Alex Schofield1; Reinhold Blümel2; Achim Kohler3; Rosalia Lukacs3; Carol Hirschmugl1; 1University of Wisconsin-Milwaukee; 2Wesleyan University; 3University of Life Sciences

10:15 AM (565) Using Protein Crystallography to Supplement Traditional Higher Order Structure Techniques Supporting the Manufacture, Development and Characterization of Biologics Drugs; Mark Brader; Moderna Therapeutics

10:35 AM (566) nano-FTIR Spectroscopy: Nanoscale Resolved Infrared Spectroscopy of Self-Assembled Polymer Monolayers; Tobias Gokus; Sergiu Amarie; Adrian Cernescu; measpec GmbH

9:15 AM (567) Long-distance Standoff Raman Spectroscopy for Minerals, Salts and Organics Detection; Shiv Sharma;

Anupam Misra; Tayro Acosta-Maeda; John Porter; University of Hawaii, HIPE/OSEST

9:35 AM (568) Remote Raman Spectroscopy and LIBS Using a Spatial Heterodyne Spectrometer and Fresnel Collection Optics; Ashley Allen; S. Michael Angel; University of South Carolina

9:55 AM (569) Standoff Deep UV Raman Imaging Spectrometer for Trace Explosives: Photonic Crystal Narrow Wavelength Devices; Sanford Asher; Sergei Bykov; Kyle Hufziger; University of Pittsburgh

10:15 AM (570) Stand-off Raman and Time-Resolved Luminescence Spectroscopy with the SuperCam Instrument on the NASA Mars 2020 Rover Mission; Samuel Clegg1; Ann Ollila1; Olivier Beyssac2; Shiv Sharma3; Anupam Misra3; Raymond Newell1; Pernelle Bernardi4; Olivier Gaspault4; Sylvestre Maurice4; Roger Wiens; 1Los Alamos National Laboratory; 2IMPIC Institut de Minéralogie et de Physique des M; 3University of Hawaii; 4Institut de Recherche en Astrophysique et Planétol

10:35 AM (571) FAST-SHS: Hyperspectral Raman Imaging Using Defocused Excitation for the Detection and Identification of Explosives; Nathaniel Gomer; Nirmal Lamsal; Haiyin Sun; Matthew Nelson; ChemImage Corporation
11:40 AM Ultimate Sensitivity in ICP-MS: Great Detection Limits – and then? Analytik Jena, Presenter: Oliver Buettel

11:50 AM Powerful LIBS and LA-ICP-MS Visualization of Elements in Samples Using Clarity Image Plus, Applied Spectra, Presenter: Jhanis J. Gonzalez

12:00 PM QTRam – Portable Raman Spectrometer for Content and Blend Uniformity, B&W Tek, Presenter: John Maticchio

12:10 PM Faster Results, Better Accuracy - Innovative Sampling with the Mira DS, Metrohm, Presenter: Adam J. Hopkins

12:20 PM The Next Generation of THz-Raman, Ondax, Presenter: James Carriere

12:30 PM New Technologies for Optical Sensing, Flash Photonics, Presenter: Steve Buckley or Stephen Smith

12:40 PM New Perspectives for Label-Free 3d Cell and Tissue Imaging with a Novel Confocal Raman Microscope Setup, WiTec, Presenter: Wei Liu

12:50 PM A-TEEM Spectroscopy of Water, Wine and Olive Oil, Horiba Scientific (II), Presenter: Karoly Csatorday

1:00 PM Great Gratings: How to Take Better Measurements, Ibsen, Presenter Heidi Olson

---

18WPATOM Posters 1 - 13

Poster Board #1 (577) Design and Characterization of a Transmission Triple Grating Spectrograph for Laser Induced Scattering Diagnostics of Plasmas Used for Chemical Analysis, Kevin Finch; Chad Pesek; Songyue Shi; Gerardo Gamez; Texas Tech University

Poster Board #2 (578) Geometric Super-resolution on Push-broom Hyperspectral Imaging for Plasma Optical Emission Spectroscopy, Songyue Shi; Xiaoxia Gong; Kevin Finch; Yan Mu; Chad Pesek; Gerardo Gamez; Texas Tech University

Poster Board #3 (579) Investigation of Intensity Variations at Large Depths in GD-OES, Arne Bengtson; David Malmström; Swerea KIMAB AB

Poster Board #4 (580) Glow Discharge Optical Emission Spectroscopy Elemental Mapping via Compressed Sensing Hyperspectral Imaging, Yue She; Songyue Shi; Kevin Finch; Gerardo Gamez; Texas Tech University

Poster Board #5 (581) Utilizing the Liquid Sampling – Atmospheric Pressure Glow Discharge Microlasma for the Quantification of Silver Nanoparticles, Katja Hall; Tatiana Estrada; George Chumanov; Kenneth Marcus; Clemson University

Poster Board #6 (582) Analysis of Canadian Hemlock Foliage and Surrounding Soil from Western North Carolina for Magnesium, Calcium and Aluminum: a Chemotoxicity Study, David Butcher; Western Carolina University

Poster Board #7 (583) Laser Ablation Flowing Atmospheric-Pressure Afterglow as a Tool for Atomic and Molecular Optical Emission Spectroscopy, Montwaun Young; Sunil Badal; Jacob Shelley; Rensselaer Polytechnic Institute

Poster Board #8 (584) Multi-Flow Calibration as a Novel Strategy for Microwave-Induced Plasma Optical Emission

---

18WPCROM Posters 14 - 16

Poster Board #9 (585) Atomization and Changes in Chemical Composition by Laser Ablation in Liquid to Determine Trace Elements in Gallium Nitride, Koki Hirotsawa; Tomohiro Ikeda; Naoki Furuta; Chuo University

Poster Board #10 (586) Gas to Particle Conversion-Gas Exchange Techniques for Direct Analysis of Arsine by ICPMS, Kosuke Takahashi; Tomohiro Ikeda; Naoki Furuta; Chuo University

Poster Board #11 (587) Effect of Excess Cu(II) on Nickel Enzyme Urease in Arabidopsis Thaliana, Armi Takahashi; Sho Nishida; Tomohiro Ikeda; Naoki Furuta; Chuo University

Poster Board #12 (588) Enhanced Mercury Detectability by Inductively Coupled Plasma – Optical Emission Spectrometry by Using Solution-Cathode Glow Discharge for Sample Pretreatment, Wade Marsh; Michael Webb; University of North Carolina at Wilmington

Poster Board #13 (589) Development of Desolvation System for Elemental Analysis of Single iPS Cell Using Droplet Injection ICP-AES/MS, Satoshi Kohno; Tomoko Miyake; Yuki Okamoto; Takahiro Iwai; Mikio Shimada; Hidekazu Miyahara; Yoshihisa Matsumoto; Koichi Chiba; Akitoshi Okino; FIRST, Tokyo Institute of Technology; Dept. of Environmental and Applied Chemistry; LANE, Tokyo Institute of Technology; The School of Science, The University of Tokyo

---

WEDNESDAY 11:00 AM - 12:00 PM & 3:10 - 3:50 PM Exhibit Hall

11:50 AM What’s Hot Vendor Presentations 11:50 - 1:10 PM, Exhibit Hall

12:00 PM Complimentary Lunch (ticket required)

---

Next year: October 13 - 18, 2019, Palm Springs, CA
for High Throughput Analysis; Steve Erskine; Stephen Fosdick; Roger Bustos; The Dow Chemical Company

Poster Board #16
(592) Profiling the Aroma of Coffee with GC, GCxGC, and TOFMS; James Carlson; Elizabeth Humston-Fulmer; Joseph Binkley; LECO Corporation

WEDNESDAY 11:00 AM - 12:00 PM & 3:10 - 3:50 PM
Exhibit Hall (Atrium)
18WPLIBS Posters 17 -37
Laser-Induced Breakdown Spectroscopy

Poster Board #17
(593) Analyses of Soil Contaminants Using Laser-Induced Breakdown Spectroscopy; Xiangyou Li1,2; Zhongqi Hao1,2; Shisong Tang1,2; Lilianbo Guo1,2; Wuhan National Laboratory for Optoelectronics; Wuhan University of Science and Technology

Poster Board #18
(594) Sensitive Determination of Chromium in Aqueous Solutions Using Surface-Enhanced Laser-Induced Breakdown Spectroscopy Combined with Laser-Induced Fluorescence; Shixiang Ma; Lilianbo Guo; Yanwu Chu; Yuyang Ma; Xiangyou Li; Xiaoyan Zeng; Yongfeng Lu; Huazhong University of Science and Technology

Poster Board #19
(595) Quantitative On-Site Analysis of Harmful Elements in Building Structures with a Mobile LIBS-System; Tobias Völker; Tobias Günther; Steven Millar; Gerd Wilsch; Bundesanstalt für Materialforschung und -prüfung

Poster Board #20
(596) Prototype LIBS Sensor for Sub-Surface Water Quality Monitoring with Applications in Carbon Storage; Daniel Hartzler1,2; Jiness Jain1,2; Dustin McIntyre1; National Energy Technology Laboratory; AECOM

Poster Board #21
(597) Multivariate Analysis on LIBS Followed by Laser-Induced Atomic Fluorescence Emissions to Quantify Minor Elements in Soil; Luke Helms; Codjo Akpovo; Lewis Johnson; Florida A&M University

Poster Board #22
(598) LIBS Analysis of High-Pressure Aqueous Solutions and Its Application in Carbon Sequestration; Jiness Jain1,2; Chet Bhatti1,2; Daniel Hartzler1,2; Dustin McIntyre1; National Energy Technology Laboratory; AECOM

Poster Board #23
(599) Basic R&D on Laser Remote Analysis for in-situ Monitoring of Nuclear Debris in Decommissioning of “Fukushima Daiich Nuclear Power Station”; Ikuo Wakaida1; Hironori Ohba1; Katsuaki Akaoka1; Yasuhiro Saeke1,2; Koji Tamura1,2; Katsuaki Akaoka1; Ikuo Wakaida; Japan Atomic Energy Agency; QST

Poster Board #24
(600) A 2.45 GHz Microwave-Enhanced Fiber-Coupled Laser-Induced Breakdown Spectroscopy; Yujie Ikeda; Ahsa Moon; Soshi Watanabe; Joseph A. Ofose; Atsushi Nishiyama; Imagineering, Inc.

Poster Board #25
(601) Fiber-Optic LIBS Detection of Gadolinium in Mixed Oxide Under Radiation Environment; Hironori Ohba1,2; Morihisa Saeke1,2; Koji Tamura1,2; Katsuaki Akaoka1; Ikuo Wakaida; Japan Atomic Energy Agency; QST
### TECHNICAL PROGRAM - WEDNESDAY

**POSTERS SESSIONS & COFFEE BREAKS 11:00 AM - 12:00 PM & 3:10 - 3:50 PM, Exhibit Hall**

<table>
<thead>
<tr>
<th>Poster Board #36</th>
<th>(612) Miniatirized Low Power LIBS System for in-situ Exploration of Solar System, Simon Kubitzka; Kristin Rammelkamp; David S. Vogt; Sven Frohmann; Peder B. Hansen; Susanne Schröder; Heinz-Wilhelm Hübers; German Aerospace Center (DLR); Humboldt-Universität zu Berlin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poster Board #37</td>
<td>(613) Quantitative Analysis of Uranium in LiCl-Li2O Salt Using LIBS: Se Hwan Park; Seul-Ki Han; Seong Kyu Ahn; Korea Atomic Energy Research Institute</td>
</tr>
<tr>
<td>Poster Board #38</td>
<td>(614) THORS: Thermally-Induced Optical Reflection of Sound; Daniel Kazal; Ellen Holthoff; Joel Mobley; Daniel Kazal; Ellen Holthoff; Joel Mobley</td>
</tr>
</tbody>
</table>

### WEDNESDAY 11:00 AM - 12:00 PM & 3:10 - 3:50 PM

**Room Exhibit Hall (Atrium) 18WPENS Posters 38 - 41 Stand-off Sensing**

**POSTERS SESSIONS & COFFEE BREAKS 11:00 AM - 12:00 PM & 3:10 - 3:50 PM, Exhibit Hall**

**ROOM L401 18AES02: Electrokinetics for Separation and Cellular Analysis**

- Chairs: Lisa Flanagan, Mei He

**1:30 PM (618) Absolute miRNA Quantification without Exosome Isolation or RNA Extraction; Zeinab Ramshani; Ceming Wang; Hseuh-Chia Chang; Satyajyoti Senapati; David Go; Reggie Hill; University of Notre Dame**

**1:50 PM (619) Microfluidic Electroporation for Tranfecting 3D-Cultured Cells and Tissues; Mei He; Qingfu Zhu; University of Kansas**

**2:10 PM (620) Membrane Capacitance, Cell Surface Glycosylation and Cell Fate; Lisa Flanagan; Andrew Yale; Jamison Nourse; Kayla Lee; Syed Ahmed; Alan Jiang; Michael Demetriou; University of California, Irvine**

**2:30 PM (621) Microbial-Culture Independent Antibiogram Susceptibility Assessment by AC Electro-Phenotyping; Nathan Swami; John Moore; Ali Rohani; Cirle Warren; University of Virginia**

**2:50 PM (622) Astrocyte Progenitor Enrichment with a Hydrodynamic Oblique Angle Parallel Electrode Sorter (HOAPES); Tayloria N.G. Adams; Alan Y.L. Jiang; Abraham P. Lee; Lisa A. Flanagan; University of California Irvine**

### TECHNICAL PROGRAM - WEDNESDAY

**ORALS 1:30 - 3:10 PM**

**ROOM L506 18BIM03: Analytical Technologies in Infectious Diseases I: Molecular Methods**

- Chair: Juergen Popp

**2:10 PM (625) Multilevel Partial Least Squares Analysis of Atmospheric Elemental Carbon: Insights into Aerosol Sources; Andrew Weakley; Ann Dillner; Air Quality Research Center, UC Davis**

**2:30 PM (626) There must be a Better Way to Visualize Data: Projection Pursuit as an Alternative to Principal Components Analysis; Peter Wentzell; Dalhousie University**

**2:50 PM (627) The Subterranean Signal to Noise Blues: Finding Trace Components with Multivariate Curve Resolution Applied to Hyperspectral Raman Images; Karl Boosk; Erin Holahan; Joseph Smith; Frank Smith; Steven Brown; University of Delaware**

### WEDNESDAY 1:30 PM - 3:10 PM Room L506

**18BIM03: Analytical Technologies in Infectious Diseases I: Molecular Methods**

**1:30 PM (628) Full Genome Virus Detection via Nanopore Sequencing; Manja Marz; Friedrich Schiller University Jena**

**1:50 PM (629) Fluorescence Lifetime Imaging of a Membrane Potential Probe as an Indicator of Bacteria Viability; Joy Dunkers; Brynna Jones; Hari Iyer; Stephan Stranick; Nancy Lin; National Institute of Standards and Technology**

**2:10 PM (630) SERS Studies on Labelled ssDNA: towards Biosensors for DNA Mutations Detection: Aleksandra Jaworska; Edyta Pyrak; Andrezj Kudelski; University of Warsaw**

**2:30 PM (631) Insulator-Based Dielectrophoresis to Characterize the Electrokinetic Behavior of Bacterial and Yeast Cells and Create a Library; Adriana Coll De Peña; Andre O. Hudson; Anuuthaman Parthasarathy; Blanca Lapizco-Encinas; Rochester Institute of Technology**

---

**Next year: October 13 - 18, 2019, Palm Springs, CA**
## TECHNICAL PROGRAM - WEDNESDAY
### ORALS 1:30 - 3:10 PM

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:50 PM</td>
<td>(632) Multiplexed Target Enrichment for Rapid and Lower-Cost Molecular Diagnostics Using Isotachopherosis; Ashish Ramachandran; Nobuyuki Futai; Juan G. Santiago; Stanford University; Shibaura Institute of Technology</td>
<td></td>
</tr>
<tr>
<td>1:30 PM</td>
<td>(633) Assessing the Degree of a Sample Matrix Match (Chemically, Physically, and Instrumentally) to a Calibration Set; John Kalivas; Rachel Emerson; Idaho State University; Idaho National Laboratory</td>
<td></td>
</tr>
<tr>
<td>1:50 PM</td>
<td>(634) Calibration Transfer: How Changing the Hardware Made the Maths Much Easier; Jonathon Speed; Victoria Grigson; James Sobol; Stephanie Wood; Kett Ltd</td>
<td></td>
</tr>
<tr>
<td>2:10 PM</td>
<td>(635) Raman Method Development for Samples in Solution with Strong Interference; Suyang Wu; Yuxiang Zhao; Shikhar Mohan; James Drennen, III; Carl Anderson; Duquesne University</td>
<td></td>
</tr>
<tr>
<td>2:30 PM</td>
<td>(636) Processing of Large-Scale Laser Spectroscopy Data; Pavel Pořízka; Jakub Klas; Jakub Vraběl; Erik Képeš; David Procházka; Pavlina Modlitbová; Jozef Kaiser; Central European Institute of Technology; AtomTrace a.s.</td>
<td></td>
</tr>
<tr>
<td>2:50 PM</td>
<td>(637) Automating Chemometrics for Industrial Applications; Michael Roberto; Infometrix, Inc.</td>
<td></td>
</tr>
<tr>
<td>1:30 PM</td>
<td>(638) Monolithic Quantum Cascade Laser Sources For Spectroscopic Applications; Christian Pfleugel; Pendar Technologies</td>
<td></td>
</tr>
<tr>
<td>1:50 PM</td>
<td>(639) Cascade Lasers in Biodiagnostics; Boris Mizaikoff; Uln University</td>
<td></td>
</tr>
<tr>
<td>2:10 PM</td>
<td>(640) Accelerating Adoption of QCLs and ICLs; Kevin Lascola; Feng Xie; Lawrence Hughes; Ronald Govoro; Thorlabs Quantum Electronics</td>
<td></td>
</tr>
<tr>
<td>2:30 PM</td>
<td>(641) Mid-Infrared Laser Based Chemical Imaging; Markus Brandstetter; Jakob Kilgus; Robert Zimmerleiter; Michael Leitner; Hannah Seferovic; Christian Rankl; Research Center for Non Destructive Testing; Johannes Kepler University Linz; SCL-Sensor, Tech Fabrication GmbH</td>
<td></td>
</tr>
<tr>
<td>2:50 PM</td>
<td>(642) Accessing Drug Encapsulation in Liposomal Nanocarriers with Nanoscale Lateral Resolution through Hyphenation of NES-GEMMA and PTIR spectroscopy; Karin Wieland; Victor U. Weiss; Georg Ramer; Gunter Allmayer; Andrea Centrone; Bernhard Lendl; TU Wien; University of Maryland; CNST/NIST</td>
<td></td>
</tr>
<tr>
<td>1:30 PM</td>
<td>(643) Laser-Matter Interaction at Nanoscale and Plasmonic Enhanced Surface Photoablation; Alessandro De Giacomo; Marcella Dell'Aglio; Rim Alrifai; University of Bari; CNR-NANOTEC</td>
<td></td>
</tr>
<tr>
<td>1:50 PM</td>
<td>(644) Nanoparticle-Based Immunocinematography: Novel Readout Method Based on Laser-Induced Breakdown Spectroscopy; Karel Novotny; Pavlina Modlitbová; Zdeněk Farka; Karolina Vytisková; Pavel Pořízka; Petr Skládal; Viktor Kanicky; Jozef Kaiser; Central European Institute of Technology; Central European Institute of Technology, MU; Masaryk University, Faculty of Science</td>
<td></td>
</tr>
<tr>
<td>2:10 PM</td>
<td>(645) Ultrafast Analysis in the Mining Industry; Kheireddine Rifai; F.R. Doucet; L.C. Ozcan; F. Vidal; ELEMISI Inc.; INRS-Energie Matériaux Télécommunications</td>
<td></td>
</tr>
<tr>
<td>2:30 PM</td>
<td>(646) Application of Principal Component Analysis for Classification of Laser-Induced Breakdown Spectroscopy Spectra from Gold Ores; David Hahn; Alejandro Molina; University of Florida; Universidad Nacional de Colombia - Sede Medellin</td>
<td></td>
</tr>
<tr>
<td>2:50 PM</td>
<td>(647) Laser Induced Breakdown Spectroscopy for in-situ Multielemental Analysis during Metal Parts Production by Additive Manufacturing; Vasily N. Lednev; Roman S. Tretyakov; Pavel A. Sdvizhenskiy; Mikhail Ya. Grishin; Roman D. Asyutin; Mikhail A. Davydov; Sergey M. Pershin; Prokhorov General Physics Institute of RAS; National University of Science and Technology MISIS; Bauman Moscow State Technical University; Moscow Institute of Physics and Technology</td>
<td></td>
</tr>
</tbody>
</table>

### WEDNESDAY 1:30 PM - 3:10 PM Room A707

<table>
<thead>
<tr>
<th>Room A707</th>
<th>18IR06: Quantum Cascade Lasers – I</th>
<th>Chair: Bernhard Lendl</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 PM</td>
<td>(638) Quantum Cascade Laser Sources For Spectroscopic Applications; Christian Pfleugel; Pendar Technologies</td>
<td></td>
</tr>
<tr>
<td>1:50 PM</td>
<td>(639) Cascade Lasers in Biodiagnostics; Boris Mizaikoff; Uln University</td>
<td></td>
</tr>
<tr>
<td>2:10 PM</td>
<td>(640) Accelerating Adoption of QCLs and ICLs; Kevin Lascola; Feng Xie; Lawrence Hughes; Ronald Govoro; Thorlabs Quantum Electronics</td>
<td></td>
</tr>
<tr>
<td>2:30 PM</td>
<td>(641) Mid-Infrared Laser Based Chemical Imaging; Markus Brandstetter; Jakob Kilgus; Robert Zimmerleiter; Michael Leitner; Hannah Seferovic; Christian Rankl; Research Center for Non Destructive Testing; Johannes Kepler University Linz; SCL-Sensor, Tech Fabrication GmbH</td>
<td></td>
</tr>
<tr>
<td>2:50 PM</td>
<td>(642) Accessing Drug Encapsulation in Liposomal Nanocarriers with Nanoscale Lateral Resolution through Hyphenation of NES-GEMMA and PTIR spectroscopy; Karin Wieland; Victor U. Weiss; Georg Ramer; Gunter Allmayer; Andrea Centrone; Bernhard Lendl; TU Wien; University of Maryland; CNST/NIST</td>
<td></td>
</tr>
</tbody>
</table>

### WEDNESDAY 1:30 PM - 3:10 PM Room L504

<table>
<thead>
<tr>
<th>Room L504</th>
<th>18MASS02: Intact Protein Analysis</th>
<th>Chair: Lissa Anderson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 PM</td>
<td>(648) An Introduction to Top-Down Proteomics: Strengths, Weaknesses and Opportunities; Lissa Anderson; NHMFL-FSU</td>
<td></td>
</tr>
<tr>
<td>1:50 PM</td>
<td>(649) Characterizing Modified Forms of Key Oncoproteins by Top-Down Mass Spectrometry; Caroline Dehart; Luca Fornelli; Peter Doubleday; Josiah Hutton; Lissa Anderson; Neil Kelleher; Northwestern University; National High Magnetic Field Laboratory</td>
<td></td>
</tr>
<tr>
<td>2:10 PM</td>
<td>(650) Utilizing 2T Space Charge and Peak Capacity through Mixed (Chimeric) Ion Loading for Top-down Proteomics; Chad R. Weishrodt; Lissa C. Anderson; Greg T. Blakney; Caroline J. DeHart; Christopher L. Hendrickson; ICR Program, NHMFL; Northwestern University, Evanston, IL; Florida State University</td>
<td></td>
</tr>
<tr>
<td>2:30 PM</td>
<td>(651) High Throughput Quantitative Top-Down Proteomics; Si Wu; Zhang; Dangyu Yu; Xiaowen Liu; University of Oklahoma</td>
<td></td>
</tr>
<tr>
<td>2:50 PM</td>
<td>(652) How Do Proteins Unfold in the Gas Phase?; Christian Bleiholder; Florida State University</td>
<td></td>
</tr>
</tbody>
</table>

### WEDNESDAY 1:30 PM - 3:10 PM Room L507

<table>
<thead>
<tr>
<th>Room L507</th>
<th>18NANO02: Combining Light and Electrochemistry in Nanostructures (II)</th>
<th>Chairs: Gangli Wang, Wei Zhao</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 PM</td>
<td>(653) Electrochemically Driven Separation of Ions through Ordered Nanoporous Carbons; Sheng Dai</td>
<td></td>
</tr>
</tbody>
</table>

Next year: October 13 - 18, 2019, Palm Springs, CA
2:30 PM (666) Investigating Biocompatibility and Bone Quality of Bone Implants in vitro Using Raman Spectroscopy; Anders Runge Walther; Morten Ostergaard Andersen; Martin Aage Barsoe Hedegaard; University of Southern Denmark

2:50 PM (667) A Microfluidic Device to Probe Cell Radio-Sensitivity by Raman Scattering; Alexandre Brolo¹; America Palacios¹; Andrew Jirasek²; Julian Lum³; Samantha Van Nest⁴; ¹University of Victoria; ²University of British Columbia; ³University of Victoria; ⁴University of Victoria, Department of Physics

WEDNESDAY 1:30 PM - 3:10 PM Room A703
18RAM16: NanoIR/NanoRaman I
Chairs: Andrew Whitley, Curt Marcott

1:30 PM (668) Infrared Nanopolarimetric Analysis of Structure and Anisotropy of Thin Films; Karsten Hinrichs; Timur Shankhutdinov; ISAS – e. V.

1:50 PM (669) Nano-Optical Investigations of 2D Semiconductors at Length Scales that Matter; P James Schuck¹; Nicholas Borys²; Thomas Darlington¹, ², ³; Kaiyuan Yao¹, ², ³; Emanuil Yanev¹; Jenny Ardelean¹; Wei Bao²; ³; Jim Hone¹; ³Columbia University; ²Molecular Foundry, LBNL; ³U. C. Berkeley; ⁴Montana State University

2:10 PM (670) Variable Temperature Raman Micro-Spectroscopy as a Nanoanalytical Tool; Craig Wall¹; Jon Kurvits²; Will Baker¹; ³Montana Instruments; ²Princeton Instruments

2:30 PM (671) Nano-Optical Imaging of 2D Heterostructures: TERS vs TEPL; Dmitri Voronine; ³University of South Florida

2:50 PM (672) Probing Protein Secondary Structure at the Nanometer-Scale Using Infrared Nano-Spectroscopy (nano-FTIR); Adrian Cernescu; neuspec GmbH

WEDNESDAY 1:30 PM - 3:10 PM Room L505
18SPR05: Plasmon-Enhanced Techniques
Chair: Jean-Francois Masson

1:30 PM (673) Controlling the Band Gap of Semiconducting Two-Dimensional Materials by Assembly; Mahmoud Mahmoud; University of Texas at San Antonio

1:50 PM (674) Probing Membrane Receptors with Enhanced Raman Imaging; Zachary Schultz; Sian Sloan-Dennison; Lifu Xiao; The Ohio State University

2:10 PM (675) Advantages of Hybrid, Propagating and Localized, Plasmonic Modes for Biosensing such as SPR, SERS and Bio-Imaging; Michael Canva¹, ²; Mitraedph Sarkar¹, ²; Julien Moreau²; Jean-Francois Bryche³; ², ³; Bernard Bartelmann; Frédéric Banville¹, ²; Paul Charette¹; ²LN2 - CNRS / Université de Sherbrooke; ²LCF - CNRS - Institut d Optique Graduate School; ³C2N - CNRS / Université de Nice Sophia Antipolis; Frédéric Banville

2:30 PM (676) Gold-Coated Nanodisk Arrays for Refractometric and SERS Sensing; Jean-Francois Masson; Mengdi Lu; Benjamin Charron; Université de Montreal

2:50 PM (677) Integration of Surface Plasmon-Based Sensor in Fiber Loop Ringdown System; Maheshwar Ghimire; Chuij Wang; Mississippi State University
3:50 PM (678) Next Generation ICP: the Microwave-Sustained, Inductively Coupled Atmospheric-Pressure Plasma; Andrew Schwartz1; Yan Cheung2,3,4; Steven Ray1; Jovan Jevtic5; Ashok Menon1; Velibor Pikelja1; Gary Hieftje6; 1State University of New York at Buffalo; 2Indiana University; 3RADOM Corporation; 4Phillips 66

4:10 PM (679) Optimizing the Powering Modes of the Liquid Sampling – Atmospheric Pressure Glow Discharge (LS-APGD)/Orbitrap System for Isotope Ratio Analysis; Ashley Perkins; R. Kenneth Marcus; Clemson University

4:30 PM (680) Imaging the Liquid Sampling – Atmospheric Pressure Glow Discharge Understanding Plasma Characteristics and Operation; Katja Hall1; Htoo Paing2; Michael Webb2; Kenneth Marcus3; 4Clemson University; 1University of North Carolina Wilmington

4:50 PM (681) Microwave-Assisted Electrospray Ionization; Maria Rivera; Jaime Orejas; Andrew Schwartz; Steven Ray; University at Buffalo

5:10 PM (682) Replacing the Argon ICP: Nitrogen Microwave Plasma Mass Spectrometry; Alexander Gundlach-Graham; Matthias Schild; Bodo Hattendorf; Detlef Günther; ETH Zurich

4:30 PM (685) Investigating Extracellular Matrix Effects on Endothelial Cell Metabolism Using Microfluidics and Mass Spectrometry; James Edwards; Saint Louis University

4:50 PM (686) LED-Induced Fluorescence Detector Arrays for Improved Resolution in Capillary Electrophoresis; Christopher Bunker; University of Tennessee

5:10 PM (687) Electrochemical Quantification of Small Molecules and Proteins Through Customized Instrumentation and Bioconjugate Schemes; Christopher Easley; Subramaniam Somasundaram; Mark Holtan; Katurena Ford; Niamat Khuda; Auburn University

3:50 PM (683) Developing and Applying New Phospholipid Coatings in CE Separations; Christopher Harrison; Michael Appel; Sangho Yun; Jessica Torres; San Diego State University

4:10 PM (684) Differentiating Cell to Cell Signaling with a Platform for Separating Beta-cell Secretions; Dana Spence; Andre Castiaux; Cody Pinger; Michigan State University

4:30 PM (685) Rapid Discrimination of Enterococcus Faecium with Multiple Physicochemical Analytics; Roy Goodacre; Najla Almasoud; Yun Xu; David Ellis; University of Manchester

4:30 PM (688) Elements of the Transition to a More Sustainable and Competitive Global Economy; Wim Willems; University of Antwerp

4:50 PM (689) Development of a Stable Substrate for Surface Enhanced Raman Spectroscopy (SERS) Detection of Aqueous Analytes; Mary Tecklenburg; Honey Madupalli; Md Shah Alam; Central Michigan University

5:10 PM (690) Raman Spectroscopy as a Tool to Measure Viability of planktonic organisms in UV-Treated Ballast Water; Martin Aage Baroe; Hedegaard; Mikkel Andreasen; Kim Lundgreen; Henrik Holbech; University of Southern Denmark

3:50 PM (685) Model Adaptation through Distribution Alignment: Domain-Invariant Extension of Partial Least Squares Regression; Ramir Nikzad-Langerodi; Recendt GmbH, Linz Austria

4:10 PM (694) Ensemble Adaptive Non-Linear Models in Multivariate Calibration; Carlos Cermada; BCAM Basque Center for Applied Mathematics

4:30 PM (695) Impact of GC > GC – TOF/MS Experimental Design on Data Structure Trilinearity for Optimal PARAFAC Performance; Robert Synovec; Sarah Prebihalo; David Pinkerton; Anisha Uppugonduri; University of Washington

4:50 PM (696) Multivariate Calibration for Earth-Mars Differences in Laser Induced-Breakdown Spectroscopy; Terry Mullen1; Mario Parente1; M. Darby Dyar2; 1University of Massachusetts Amherst; 2Mount Holyoke College

5:10 PM (697) Enhancing Chemometrics: Metrology and Traceable Calibrations; Francis W.L. Esmonde-White; Esmonde-White Technologies, LLC

3:50 PM (698) Extreme Mode Selectivity and Other Unexpected Effects in TERS Imaging of 2D Materials; Andrey Kravey1; Sergiy Krylyuk2; Payam Taheri2; Albert Davydov3; 1HORIBA Scientific; 2NIST

4:10 PM (699) Infrared Nanospectroscopy Identification and Structural Characterisation of Amyloidogenic Inclusions in C. elegans Models of Neurodegeneration; Francesco Simone Ruggeri; Michele Perni; Chris M. Dobson; Michele Vendruscolo; Tuomas J. P. Knowles; University of Cambridge

4:30 PM (700) Applying Tip-Enhanced Raman Microscopy to Biomaterials. Exploring Neurons Treated with Amyloid Beta; François Laguné-Labarthe; Mohammadali Tabatabaei; Farshid Pashaee; Western University

4:50 PM (701) Determination of Polypeptides Conformation in Water with Infrared Nano-Spectroscopy; Andrea Popp

Next year: October 13 - 18, 2019, Palm Springs, CA
Centrone; Georg Ramer; Francesco Ruggeri; Aviad Levin; Tuomas Knowles; 1National Institute of Standard and Technology; 2University of Cambridge

5:10 PM (702) TERS and Biopolymers - Where High Resolution Pays Off; Volker Deckert; Xiaobin Yao; Ludovic Roussille; Tanja Deckert-Gaudig; 2Leibniz Institute of Photonic Technology, Jena; 2Friedrich-Schiller University Jena

WEDNESDAY 3:50 PM - 5:30 PM Room A601
18LIBS05: Geology and Environment
Chairs: Matthieu Baudelet, Francois Doucet

3:50 PM (703) Laser-Induced Breakdown Spectroscopy Applications in Geological and Environmental Studies; Giorgio Senesi; CNR - NANOtec - PLasMI Lab

4:10 PM (704) How LIBS Imaging Can Increase our Understanding of Geological Samples; Cecile Fabre; Damien Devismes; Samuel Moncayo; Frederic Pelascini; Florian Trichard; Bruno Bousquet; Alexandre Tarantola; Kimberly Trebus; Jean Cauzid; Vincent Motto-Ros; 1Geoscience Resources, Univ de Lorraine; 2Institut Lumière Matière, Univ de Lyon; 3Centre Lasers Intenses Applications, Univ Bordeaux; 4Ablatom

4:30 PM (705) Spectroscopic Studies of Martian Analogue-Gypsum; Abieshek Kumar Rai; University of Allahabad

5:10 PM (707) An Implementation of Calibration-Free-LIBS for the Analysis of Spectra from Planetary Exploration; Peder Hansen; David Voigt; Susanne Schröder; Kristin Romppanen; Heikki Häkkänen; University of Jyväskylä

WEDNESDAY 3:50 PM - 5:30 PM Room L507
18NANO03: Combining Light and Electrochemistry in Nanostructures (II)
Chairs: Gangli Wang, Wei Zhao

3:50 PM (708) Sub-Particle Photoelectrochemistry Mapping for Energy Conversion; Peng Chen; 2Cornell University

4:10 PM (709) in situ Quantitative Single-Molecule Study of Dynamic Catalytic Processes in Nanconfined; Ning Fang; Georgia State University

4:30 PM (710) Elucidating the Origin of Size-Dependent Photocatalytic Activity in Plasmonic-Metal/Semiconductor Heterostructures; Wei David Wei; University of Florida

5:10 PM (712) ab initio Modeling of Light-Driven Catalysis on Surface-Doped Plasmonic Metals; John Mark Martirez; Emily Carter; Princeton University

WEDNESDAY 3:50 PM - 5:30 PM Room L504
18PAT01: SAS PAT Technical Section: PAT in the Pharmaceutical Industries
Chair: Claudia Corredor

3:50 PM (713) Development and Robustness Verification of an At-Line Transmission Raman Method for Pharmaceutical Tablets Using Quality by Design (QbD) Principles; Claudia Corredor; Bristol-Myers Squibb Co.

4:30 PM (715) Dynamic Catalytic Processes in Nanoconfinement; Giorgio Senesi; 1GeoRessources, Univ de Lorraine; 2Institut Lumière Matière, Univ de Lyon; 3Centre Lasers Intenses Applications, Univ Bordeaux; 4Ablatom

4:50 PM (716) Chemical and Physical Transformation Monitoring by Raman and IR Spectroscopies in Pharmaceutical Development; Ming Huang; Robert Wethman; John Wasylyk; BMS

5:10 PM (717) Estimation of Particle Size and Shape Distribution Using Spatially and Angularly Resolved vis-NIR Spectra; Daria Stoliarskaia; Kelly Thomson; Leo Lue; Yi-Chieh Chen; University of Strathclyde

WEDNESDAY 3:50 PM - 5:30 PM Room A704
18PMA09: Counterfeits and Drug Safety
Chair: Sulaf Assi

3:50 PM (718) USP Technology Review Program for Evaluating Screening Technologies for Detecting Medicines Quality; Stephen Kimatu; Daniel Bempong; Lukas Roth; United States Pharmacopeia (USP)

4:10 PM (719) FDA’s Role in Confronting the Opioid Crisis; Conkie Ruzicka; Jaslynn Murphy; Jamie Mans; Anna Extembrink; Alicia Hoover; Laura Pogue; US FDA

4:30 PM (720) Evaluating the Challenges of Fentanyl Detection in Forensic and Field Applications; Edward Sisco; Jennifer Verkouteren; Amber Burns; 2Perkin Elmer; 3University of L...
5:10 PM (727) Image and Characterisation of Cancer Cells Using SERS and Responsive Enhanced Raman Reporters in Breast Cancer; Anastasia Kapara1, 2; Val Brunton2; Duncan Graham1; Karen Faulds1; 1University of Strathclyde; 2University of Edinburgh

WEDNESDAY 3:50 PM - 5:30 PM Room A703

18RAM14: Raman Spectroscopic Sensing Chair: Torsten Frosch

3:50 PM (728) Why Still Infrared, If there is Raman? Towards On-Chip Precision Chem/Bio Diagnostics; Boris Mizaikoff; Ulm University

4:10 PM (729) Raman Fiber Sensing – a Promising Tool for Life Science Applications; Torsten Frosch1; Di Yan1; Juergen Popp1, 2, 3; 1Leibnitz Institute of Photonic Technology; 2Abbe Center of Photonics; 3Institute of Physical Chemistry, University Jena

4:30 PM (730) Raman Spectroscopy for Analyzing Fuel Blends; Johannes Kiefer; University of Bremen

4:50 PM (731) Cavity-Enhanced Coherent Anti-Stokes Raman Spectroscopy for Realtime Trace Gas Analysis; Shin-Ichi Zaitsu1, 2; 1Kyushu University; 2Center for Future Chemistry, Kyushu University

5:10 PM (732) Fiber Optic-Coupled Spatial Heterodyne Raman Spectroscopy; Joshua Ottaway1; Ashley Allen1; Abigail Waldron1; Erin Holahan2; Karl Booksh2; S. Michael Angel1; J. Chance Carter1; 1Lawrence Livermore National Laboratory; 2University of Delaware; 3University of South Carolina

AN ALL INCLUSIVE EVENT

6:30 PM Wednesday, Imperial B
SciX 2018 name badge is required. Don’t forget your drink ticket.

The Great Science Fiction Exchange

Join us for the SciX 2018 Gala Wednesday, October 24
THURSDAY 9:15 AM - 10:55 AM Room A601
18AWD02: Lester Strock Award Symposium
Honoring Javier Laserna
Chairs: Alexandra Ros, Blanca Lapizco-Encinas

9:15 AM (740) Application of the LIBS Technique to the Detection of Nanostructured Particles in Aerosol Form; Christophe Dutouquet¹; Joerg Hermann²; Laifa Boufendi³; Olivier Le Bihan⁴; Emeric Frejafon¹;
¹INERIS/DRC/CARA/PROX; ²LP3, CNRS - Aix-Marseille University; ³GREMI Orleans University

9:35 AM (741) Nanoparticle Enhanced Laser Induced Breakdown Spectroscopy: Modulating the Laser Matter Interaction During Laser Ablation; Alessandro De Giacomo¹, ²; Marcella Dell’Aglio¹; Rim Alrifai¹; 
¹University of Bari; ²CNR-NANOTEC

9:55 AM (742) Analysis of Nano and Submicrometer Particles in Gases and Solids with Laser-Induced Breakdown Spectroscopy; Daniel Diaz; David Hahn; University of Florida

10:15 AM (743) Unconventional Ultrafast Laser Beams in LIBS Analysis; Vassilia Zorba; Lawrence Berkeley National Laboratory

10:35 AM (744) Correlation between Surface Transformations and Spectroscopy during Single-Shot Femtosecond Laser Ablation; José M. Vadillo; Irene M. Carrasco; J. Javier Laserna; Universidad de Malaga, UMALASERLAB

THURSDAY 9:15 AM - 10:55 AM Room A706
18AWD03: ANACHEM Award Session
Chair: Keith L. Olson

9:15 AM (745) New Approaches of Microchip-based Electrochemical Detection for Cellular Analysis; R. Scott Martin; Saint Louis University

9:35 AM (746) Next Generation Bioanalytical Electrophoresis in Microscale Channels; Lisa Holland; West Virginia University Chemistry

9:55 AM (747) Microfluidics, Electrochemistry, Nitric Oxide, and Neurology: It has to be the Lunte Group!; Dana Spence; Michigan State University

10:15 AM (748) Microfluidic Devices for the Analysis of Single Cells; Christopher Colbertson¹; Susan Lunte²; Jay Sibbit³; Jalal Sadeghi¹; 
¹Kansas State University; ²University of Kansas

10:35 AM (749) Exhaled Breath Analysis Using Microfluidic Devices; Tom Lintz; Wayne State University

THURSDAY 9:15 AM - 10:55 AM Room L503
18CHEM02: Chemometrics and Image Analysis: Two Sides of the Same Coin
Chair: Thomas Bocklitz

9:15 AM (750) Investigation of Feature Extraction for Spectral and Image Data in Biological Applications; Shuxia Guo¹; Jürgen Popp¹, ²; Thomas Bocklitz¹, ²; ¹Institute of Physical Chemistry University of Jena; ²Leibniz institute of photonic technology

9:35 AM (751) Data Fusion with Non-Optimized Models: Application to Principal Component Analysis of Lock-In Thermography Images and Classification Problems; John Kalivas; Ikwulono Unobe; Tony Lemos; Idaho State University

9:55 AM (752) Multilinear Resolution of Advanced Fluorescence Imaging Data; Cyril Ruckebusch; Siewert Hugelier; Michel Sliwa; Université de Lille

10:15 AM (753) Classical Machine Learning for the Analysis of Morphological Changes in Image Data of Biological Samples; Thomas Boeklitz¹; ²; Oleg Ryabchikov¹, ²; Eyvlin Kämmer¹, ²; Anuradha Ramoji², ³; Ute Neugebauer¹, ², ³; Jürgen Popp¹, ², ³; ¹FSU Jena; ²Leibniz-IPHT Jena; ³Center for Sepsis Control and Care (CSCC), Jena Un

10:35 AM (754) CoHyb: Coevolution Hybridation for Variable Selection. Application to Multivariate Calibration; Carlos Cernuda; BCAM Basque Center for Applied Mathematics

THURSDAY 9:15 AM - 10:55 AM Room L507
18CTP01: Analytical Chemists Easing World Poverty: Frugal Healthcare
Chairs: Barbara Smith, Rebecca Airmet

9:15 AM (755) Low-Cost Diagnostics: Decentralizing Medical Testing and Enabling e-Health; Dionysios Christodoulou; University of Massachusetts Lowell

9:35 AM (756) Innovative Approaches to Diagnosing Breast Cancer in Resource-Limited Settings; Jane Brock; Brigham & Women's Hospital

9:55 AM (757) Open Aina: Bringing Diagnostics to the Masses; Ashok Kumar; Jana Care

10:15 AM (758) Low-Cost Hearing Aid Platform; Saad Bhamla; Soham Sinha; Georgia Institute of Technology

10:35 AM (759) Detecting Toxins and Other Contaminants in Milk and Grain Products in Low Resource Settings; Matthew Keller¹; Wenbo Wang¹; Changwon Lee¹; James Stafford¹; Marie Connett²; Benjamin Wilson¹; ¹Intellectual Ventures Lab; ²Global Good

Next year: October 13 - 18, 2019, Palm Springs, CA
<table>
<thead>
<tr>
<th>Time</th>
<th>Event Title and Details</th>
</tr>
</thead>
</table>
| 9:15 AM | **18IR04: Clinical Applications of IR Spectroscopy and Imaging**  
Chair: Matthew Baker  
- Extracting Clinically Actionable Information from Regions of Fibrosis in Human Biopsies: Michael Walsh  
Hari Sreedhar; David Martinez; Shaiju Nazeer; Grace Guzman; Suman Setty; University of Illinois at Chicago  
9:35 AM | Emerging Imaging Technologies for Rapid High-Resolution Mid-IR Spectral Histopathology: Michael Hermes; Saher Junaid; Saddamali Chaitanya Kumar; Peter Tidemand-Lichtenberg; Christian Pedersen; Majid Ebrahim-Zadeh; Nick Stone; University of Exeter  
2DTU Fotonic; 4Radiantis; 4ICFO: Institut de Ciencies Fotoniques  
9:55 AM | Transcutaneous Near Infrared Spectroscopic Assessment of Bone: James Karchner; Jina Ok; Nishith Patel; Alex Dumont; Mary Barbee; Sayed Ali; Chetan Patil; Cathleen Raggio; Nancy Pleshko; Hospital for Special Surgery  
10:15 AM | Laser Spectroscopy for Breath Analyses from Instrumentation to Clinical Application: Chuii Wang; Meixiu Sun; Chennu Jiang; Yukai AF; Yingxin Li; Mississippi State University; Institute of Biomedical Engineering, Chinese Acad  
10:35 AM | Infrared Spectroscopic Study of Protein Breakdown in in vitro Digestion Model Systems: Ulika Böcker; Sleslie Wubslet; Bente Kirkhus; Nils Kristian Afseth; Nofima  
10:55 AM | Natural Product Bioactive Peptide Discovery Using PepSAVI-MS: Leslie Hicks; Christine Kirkpatrick; Nicole Parsley; University of North Carolina Chapel Hill  
9:35 AM | Development and Application of a Novel Function Proteomics Tool: The Activity-Correlated Protein Profiling Platform (ACPPl): Si Wu; Hongyan Ma; Morgan Mann; Toni Woodard; University of Oklahoma  
9:55 AM | Using Mass Spectrometry to Study Protein Structure in the Native Cellular Environment: Lisa Jones; University of Maryland  
10:15 AM | Quantifying Human Cell Surface Glycoprotein Dynamics using Mass Spectrometry-Based Proteomics: Ronghu Wu; Fangxu Sun; Suttipong Suttapitugsakul; Georgia Institute of Technology  
10:35 AM | Redox Proteomics of Stomatal Immunity Reveals Role of a Lipid Transfer Protein in Plant Defense: Sheldon Lawrence II; Kelly Balman; Ben Duong; Fanzhao Zhu; Ning Zhu; Joshua Nicklay; Sixue Chen; University of Florida; Thermo Fisher Scientific  
10:55 AM | **18MASS04: Activity-Based Mass Spectrometry**  
Chair: Leslie M. Hicks  
- chair: Matthew Baker  
- chair: Jim Rydzak, Savitha Panikar  
9:55 AM | Dissolution Modeling for Real Time Release Testing in Continuous Manufacturing: Owen Rehrauer; Matt Kiesz; Caitlin Schram; Justin Pritchard; Kelly Winney; Vertex Pharmaceuticals  
10:15 AM | Analytical Needs for Continuous Processing, a Shift from Assurance to Automation and Advanced Control: Chris Mcready; Sartorius Stedim  
10:35 AM | A PAT-based Hybrid Process Control System for Drug Product Development: Hanzhou Feng; James K. Drennen III; Carl Anderson; Pharmaceutical Sciences, Duquesne University  
10:55 AM | **18PAT07: Modeling for Continuous Manufacturing**  
Chairs: Igor K.Lednev, Koichi Iwata  
**18RAM02: Time-Resolved & Nonlinear Raman and IR**  
Chairs: Igor K.Lednev, Koichi Iwata  
- chair: Lyons Lackey  
- chair: Wei Qiu  
- chair: Motohiro Banno  
10:15 AM | Detection of Lithium in Breast Milk and the Mammary Glands: Condan Lau; Irfan Ahmed; University of Hong Kong  
10:35 AM | Quantitative Assay of Metal Impurities and Pharmaceutical Quality Evaluation of Multisource Levofloxacin Tablets Registered in Nigeria: Aderonke Adepoju-Bello; Chukwuemeka Azubuike; University of Lagos  
10:55 AM | **18PMA01: Pharmaceutical Atomic Spectroscopy**  
Chair: Lydia Breckenridge  
9:15 AM | Solid Analysis Techniques to Monitor Metals in Plastic Packaging for Pharmaceuticals: Lydia Breckenridge; Sharla Wood; Bristol-Myers Squibb Co.  
9:35 AM | Rapid Cannabis Analysis Using Optical Spectroscopy: Francois Doucet; Andrezej W. Miziolek; Lutfi Ozcan; Kheireddine Rifaï; Steven J. Rehbein; Charles Harb; Jeff Raber; Mike Zapf; ELEMISIION Inc.; Spectral Cannalyzer; University of Windsor; RingIR  
9:55 AM | Elemental Analyses in Pharmaceutical Development: Brittany Kassim; Lanfang Zou; Nina Lyow; Qiang Tu; Xiaodong Bu; Merck & Co.  
10:15 AM | Detection of Lithium in Breast Milk and the Mammary Glands: Condan Lau; Irfan Ahmed; City University of Hong Kong  
10:35 AM | Quantitative Assay of Metal Impurities and Pharmaceutical Quality Evaluation of Multisource Levofloxacin Tablets Registered in Nigeria: Aderonke Adepoju-Bello; Chukwuemeka Azubuike; University of Lagos  
10:55 AM | **18RAM03: Time-Resolved & Nonlinear Raman and IR**  
Chairs: Igor K.Lednev, Koichi Iwata  
9:15 AM | Ultrafast Time-Resolved Vibrational Spectroscopy for Direct Analysis of Charge Carrier Dynamics in Methylammonium Lead Halide Perovskites: Terry Gustafson; Lisa Nguyen; Eric Mcclure; Patrick Woodward; The Ohio State University  
9:35 AM | Development of Stimulated Raman Microscopy with High Spatial Resolution: Motohiro Banno; Hiroharu Yuri; Tokyo University of Science  
TECHNICAL PROGRAM - THURSDAY
ORALS 9:15 - 10:55 AM

Poster Board #1
(795) A Rapid Non-Destructive Method for Determining Quality Parameters of Edible Oils; Ariel Bohman-Paolo; Kathryn Lawson-Wood; Robert Packer; PerkinElmer

Poster Board #2
(796) Rapid Screening Technique to Determine Authenticity and Adulteration of Herbs and Spices; Kathryn Lawson-Wood; Ian Robertson; Ariel Bohman; PerkinElmer

Poster Board #3
(797) Methods for Training Multi-Spectral Short Wave Infrared (SWIR) Chemical Imaging Sensors; Robert Schweitzer; Shashank Deshpande; Shawna Tazik; Matt Nelson; Patrick Treado; ChemImage Corp

Poster Board #4
(798) Utilization of Fiber-Optic UV-Vis Detection Coupled with Multivariate Statistical Analysis to Monitor a Dynamic Solution Based System in Real Time; Zhenyu Lu; James Shannon; Mark Tawa; Mark Oliveira; David Webster; Melissa Quinn; J. Peter Mustonen

10:15 AM (783) Electronic and Vibrational Relaxation of Four Carotenoids Observed with Femtosecond Time-Resolved Absorption and Stimulated Raman Spectroscopy in Near-Infrared Spectral Region; Koichi Iwata; Tomohisa Takaya; Gakushuin University

10:35 AM (784) Use of Nonlinear Optics for Materials State Awareness; James Patterson; Brigham Young University

10:35 AM (789) SORS Using Digital Micro-Mirror Devices; Faris Sinai; Zhiyu Liao; Max Dooley; Ioan Nottingher; University of Nottingham; University of Tokyo

THURSDAY 9:15 AM - 10:55 AM Room L506
18SPECIAL02: Joint Plttecon/FACSS Session: Analysis of Microplastics II
Chair: Mark Banaszak-Holl

9:15 AM (790) Microplastics and Nanoplastics in our Drinking Water and Other Consumer Products; Nathalie Tufenkji; Laura Hernandez; Jeffrey Farner Budarz; Mira Okshlevsky; Nariman Yousefi; McGill University

9:35 AM (791) Uptake and Retention of Nanoplastics in Quagga Mussels; Mark Banaszak Holl; Rachel Merzel; Lauren Purser; Taylor Soucy; Monica Olzewsksi; Isabel Colon-Bernal; Ashley Elgin; Melissa Duhaine; Monash University; University of Michigan; NOAA Great Lakes Environmental Research; Ecology and Evolutionary Biology

9:55 AM (792) FTIR and Raman Analysis of Microplastics; Steve Lowry; Suja Sukumaran; Massimiliano Rocchia; Ines Ruff; Thermo Fisher Scientific

10:15 AM (793) Development of in-situ LIBS and Raman Spectroscopic Analysers for Exploration of Deep-Sea Hydrothermal Vent Fields; Tomoko Takahashi; Soichi Yoshino; Yutaro Takaya; Tatsuo Nozaki; Toshihiko Okhi; Koichi Okhi; Tetsuo Sakka; Blair Thornton; The University of Tokyo; JAMSTEC; OK Lab. Co. Ltd.; Kyoto University

10:35 AM (794) Raman Degradation of Study of Polyactic Acid (PLA); Slobodan Sasic; Tim Pruinsk; Olga Milikofu; Mayumi Misawa; Richard Bormett; Kenji Miyahara; Atsushi Kato; Renishaw Inc; Renishaw UK; Nissan ARC

TECHNICAL PROGRAM – THURSDAY
POSTERS SESSIONS & COFFEE BREAKS 11:00 AM - 12:00 PM & 3:10 - 3:50 PM, Imperial B

Poster Board #5
(799) One-Class Classification Using Sum of Ranking Differences of Outlier Measures with Application to Food Authentication; Tony Lemos; John Kalivas; Idaho State University

Poster Board #6
(800) Diagnostic of Marine Sediment by the Lbs Technique; Modou Niaoi; Hassen Ghallila; Yousef Majidi; Ndeye Arame Boye Faye; Cheikh Anta Diop University; El Manar university; Faculty of Sciences of Tunis, El Manar university; Cheikh Anta Diop University

Poster Board #7
(801) High-throughput Chemotyping of Cannabis and Hemp Extracts by Using Ultraviolet Microplate Reader and Class Modeling; Zewei Chen; Steven Baugh; Ohio University; Chemical Mapping Inc.

Poster Board #8
(802) Detection of Degradation Along the Length of Polyester-Urethane Audio Magnetic Tapes Using Machine Learning Techniques; Nilmini Ratnasena;

Next year: October 13 - 18, 2019, Palm Springs, CA
THURSDAY 11:00 AM - 12:00 PM & 3:10 - 3:50 PM Imperial B
18THPFORENS Posters 19 - 26
Forensics

Poster Board #19
(813) RADLabMET: EPA; Alison Tamasi; Robert Stiles; Charmaine Tuson; Zachary Chambers; Jack Burn1; John Grigg; US Environmental Protection Agency

Poster Board #20
(814) Identification of Species’ Blood by Attenuated Total Reflection (ATR) Fourier Transform-Infrared (FT-IR) Spectroscopy; Ewelina Mistek; Igor Lednev; University at Albany, SUNY

Poster Board #22
(816) Human Scent Forensics: A Cross-Disciplinary Study Using SPME-GC/MS VOC Analyses and Next Generation DNA Sequencing; Chantrell Frazier; Florida International University

Poster Board #23
(817) The Progression Towards an Uncertainty Calculation for GCMS Relative Abundances Produced by Novel Psychoactive Substances; Kristin Kelly; Suzanne Bell; Sydney Brooks; Ben Alderson; West Virginia University

Poster Board #24
(818) EPA’s Efforts to Enhance Radiochemistry Capacity and Capability - Rapid Radiochemical Methods & Guidance Documents; Robert Stiles1; Cindy White1; Kathy Hall2; John Griggs3; ‘EPA - NAREL; ‘EPA - National Homeland Security Research Center

Poster Board #25
(819) The Scent of a Weapon: Determining Off-Gassing of Components in an Explosive Environment; Greg Klunder; Chris Harvey; Daniel Mew; Alex Vu; Ginger Guillet; Josh Ottaway; Kristl Adams; Elizabeth Glascue; Lawrence Livermore National Laboratory

Poster Board #26
(820) Universal Detection of Body Fluid Traces In Situ with Raman Hyperspectroscopy for Forensic Purposes; Marisia Fikiet1; Gregory Mclaughlin1; Masahiro Ando2; Hiro-o Hamaguchi2; Igor Lednev3; ‘University at Albany, SUNY; ‘Spectroscopic Science Laboratory

THURSDAY 11:00 AM - 12:00 PM & 3:10 - 3:50 PM Imperial B
18THPLIBS Posters 27 - 52
Laser-Induced Breakdown Spectroscopy

Poster Board #27
(821) Time-Resolved Spectral Imaging of LIBS Plasma at Low Pressures for the Exploration of Solar System Bodies; David Vogt1,2; Peder Hansen1,2; Kristin Rammelkamp1,2; Simon Kubitzka1; Sven Frohmann1; Susanne Schröder1; Heinz-Wilhelm Hübers1,2; ‘German
Aerospace Center (DLR); Humboldt-Universität zu Berlin (HU Berlin)

Poster Board #28
(822) Light Element Quantification in Three LIBS Environments; Cai Ytsma; Karl-Darby Dyar; Mount Holyoke College

Poster Board #29
(823) Multielemental Self-Absorption Reduction in Laser-Induced Breakdown Spectroscopy by Using Microwave-Assisted Excitation; Yun Tang; Jiaming Li; Zhongqi Hao; Shisong Tang; Zhihao Zhu; Lianbo Guo; Xiaoyan Zeng; Yongfeng Lu; Huazhong University of Science and Technology

Poster Board #30
(824) Accuracy and Stability Improvement for Meat Species Identification Using Multiplicative Scatter Correction and Laser-Induced Breakdown Spectroscopy; Yanwu Chu; Shisong Tang; Shixiang Ma; YuYang Ma; ZhongQi Hao; YangMin Guo; LianBo Guo; XiaoYan Zeng; YongFeng Lu; Huazhong Univ of Science and Technology

Poster Board #31
(825) Optimizing Collection Protocols for Quantitative LIBS: Recommendations Derived from Time-Series Spectra; Kate Lepore; M. Darby Dyar; Mount Holyoke College

Poster Board #32
(826) Quantitative Analysis on Plasma-Facing Components of Wendelstein 7-X Stellarator by Picosecond Laser-Induced Breakdown Spectroscopy combined with Laser-Induced Ablation Quadrupole Mass Spectrometry; Cong Li; Janis Oelmann; Sebastian Brezinsek; Marcin Rasinski; Chandra Prakash Dhar; Ralf König; Olaf Neubauer; Ch Linsmeier; Hongbin Ding; Christian Linsmeier; Dalian University of Technology; Forschungszentrum Jülich GmbH; Max-Planck-Institut für Plasmaphysik

Poster Board #33
(827) The Matrix Effect Impact on Measuring the Metal Hardness Using Laser Induced Breakdown Spectroscopy; Ahmed Galmed; Christine Steenekamp; Ishaq Ahmed; Anton du Plessis; Hubertus Von Bergmann; Mohamed Harith; Malik Maaza; iThemba LABS; UNISA / UNESCO; NILS, Cairo University; Stellenbosch University

Poster Board #34
(828) Comparison of LIBS, ICP, and XRF for Soils with Metals; Jay Clausen; Sam Beal; Michael Morgan; US Army Corps of Engineers ERDC-CRREL

Poster Board #35
(829) On the Intensity Enhancement in Femtosecond Double-Pulse Laser-Induced Breakdown Spectroscopy; Johannes Pedarnig; Christoph Ahamer; Johannes Kepler University Linz

Poster Board #36
(830) Screening Food Packaging for Fluorinated Compounds Using Laser-Induced Breakdown Spectroscopy; Brendan Connors; David Day; SciAps, Inc.

Poster Board #37
(831) High Resolution Spectrometer for Improved Analytical Performance of HHLIB Analyzer; Stanislav Piorek; David Mercurio; Michael Damento; Rigaku Analytical Devices

Poster Board #38
(832) Improvement of LIBS Quantitative Capability Using Collinear Long and Short DP Laser; Yoshinori Deguchi; Minchao Cui; Zhenzhen Wang; Fangjung Shiono; Tokushima University; Xi; National Taiwan University of Science and Technology

Poster Board #39
(833) Development and Performance Evaluation of Self-Absorption-Free Laser-Induced Breakdown Spectroscopy for Directly Capturing Optically Thin Spectral Line and Realizing Accurate Chemical Composition Measurements; Lei Zhang; Iajia Hou; Wangbao Yin; Suotang Jia; State Key Laboratory of Quantum Optics and Quantum; Institute of Laser Spectroscopy; Shanxi University

Poster Board #40
(834) Discrimination of Carbonate End-Members Using Handheld LIBS Instrument: An Attempt for Quantitative Analyses; Amadou Sall; Cecile Fabre; Jean Cauzid; GeoRessources, Univ de Lorraine

Poster Board #41
(835) Quantification of Fluorine Content in Powders Using Laser-Induced Breakdown Spectroscopy; Yann Foucaud; Bastien Demeusy; Cécile Fabre; GeoRessources, Univ de Lorraine

Poster Board #42
(836) DECILIBS – Software to Assist the LIBS Analyst from A to Z; Delphine Syvilay; julian guzezenoc; Joyce Bou Sleimann; Bruno Bousquet; University of Bordeaux

Poster Board #43
(837) Variable Selection in LIBS Assisted by Multivariate Analysis; An Alternative to Multi-Peak Fitting; Bruno Boucque; julian Guzezenoc; Valérie Payre; Cécile Fabre; Delphine Syvilay; Agnes Cousin; Anne Gallot-Budynek; University of Bordeaux; INRA Bordeaux; University of Lorraine; University of Toulouse

Poster Board #44
(838) Next Generation Handheld LIBS Analyzer; Eden Couillard; Luke Schnitzius; Thermo Fisher Scientific

Poster Board #45
(839) Interference Correction for Laser-Induced Breakdown Spectroscopy Using Deconvolution Method; Liu Kun; Zhou Ran; Yan Jiupiang; Zhang Wen; Hao Zhongqi; Tang Shisong; Guo Llanbo; Li Xiaoyou; Lu Yongfeng; Zeng Xiaoyan; Wuhan Natl Lab Optoelect

Poster Board #46
(840) Beam Profile Influence on LIBS-signal Repeatability; Sahar Shata; Muhammad Sher Afgan; Hou Zongyu; Zhe Wang; State Key Lab of Power Systems; Department of Energy and Power Engineering; Tsinghua University

Poster Board #47
(841) LA-LEAF Quantitation of Platinum; Anna Anders; Jonathan Merten; Arkansas State University

Poster Board #48
(842) Boosting of Chlorine Emission by Electric Discharge Reheating in Laser-Induced Plasma; Tobias Güntner; Tobias Völker; Steven Millar; Gerd Wilsch; Bundesanstalt für Materialforschung und -prüfung

Poster Board #49
(843) Spatially Resolved Determination of Chloride Content on Rough Surfaces Using LIBS; Tobias
TECHNICAL PROGRAM - THURSDAY
POSTERS SESSIONS & COFFEE BREAKS 11:00 AM - 12:00 PM & 3:10 - 3:50 PM, Imperial B

Günther; Tobias Völker; Steven Millar; Gerd Wilsch; Bundesanstalt für Materialforschung und -prüfung

Poster Board #50
(844) Application of Two Calibration-free LIBS Techniques for Synthetic and Experimental Spectra of Cement Samples; Tobias Völker; Igor B. Gornushkin; A. Ya. Kazakov; Gerd Wilsch; Bundesanstalt für Materialforschung und -prüfung; St. Petersburg State University

Poster Board #51
(845) Practical Approaches for Ensuring and Assessing the Validity of Classifier Performance: Examples from Laser-Induced Breakdown Spectroscopy (LIBS), Richard R. Hark; Chandra S. Throckmorton; Russell S. Harmon; Christina A. Estright; Yale University; Duke University; North Carolina State Univ; Juniata College

Poster Board #52

THURSDAY 11:00 AM - 12:00 PM & 3:10 - 3:50 PM Imperial B
18THPMASS Posters 53 - 71
Mass Spectrometry

Poster Board #53
(847) Monitoring Chemical Reactions in Real-Time via Flowing Atmospheric Pressure Afterglow-Mass Spectrometry; Yinglei Pu; Xiaoxia Gong; Texas Tech University

Poster Board #54
(848) Analysis and Transformation of n-alkanes with Flowing Atmospheric-Pressure Afterglow (FAPA) Mass Spectrometry; Brian Molnar; Sunil Badal; Rensselaer Polytechnic Institute

Poster Board #55
(849) Application of Ramped Pyrolysis – Gas Chromatography – Mass Spectrometry to Elucidate Complex Products and Patterns of Weathered Oil; Meredith Evans Seeley; Qing Wang; Hernando Bacosa; Brad E. Rosenheim; Zhanfei Liu; Virginia Institute of Marine Science; University of Texas, Texas State University; Univ of South Florida; East China Normal Univ

Poster Board #56
(850) Airborne Laser-Induced Plasma as an Ambient Desorption/Ionization Source for Mass Spectrometry and its Characterization; Yi You; Andreas Bierstedt; Jens Riedel; Federal Inst of Material Research and Testing

Poster Board #57
(851) Electrospray Ionization Zoom Time-of-Flight Mass Spectrometry; Christopher Brais; Steven Ray; University at Buffalo

Poster Board #58
(852) Improvement in Ambient Mass Spectrometry Sensitivity via Computational Fluid Dynamics Modeling; Allen White; Jin Young Song; Brian Molnar; Sunil Badal; Jacob Shelley; Gary Hiett; Indiana University; Rensselaer Polytechnic Institute; Rose-Hulman Institute of Technology

Poster Board #59
(853) Surveillance of Opioid Products Using Ion Mobility Spectrometry; Jaslynn Murphy; Connie Ruzicka; Food and Drug Administration

Poster Board #60
(854) Biomonitoring Method Measuring Pb, Cd, Hg, Mn, and Se for Analysis of Human Blood Samples on an Agilent 8900 ICP-QQQ-MS; Deanna R. Jones; Jeffrey M. Jarrett; Kristen Wallon; Melanie Franklin; Kathleen L. Caldwell; Robert L. Jones; Centers for Disease Control and Prevention; Battelle Memorial Institute

Poster Board #61
(855) Diode Laser Assisted Desorption Low Temperature Plasma Mass Spectrometry for Direct Analysis of Compounds Separated by Thin-Layer Chromatography; Xiaoxia Gong; Songyue Shi; Gerardo Gamez; Texas Tech University

Poster Board #62
(856) Atmospheric-Pressure ICP Afterglow Ionization: Mechanistic Insights into Elemental Chlorine Detection in Negative Mode; Joseph Lesniewski; William Mcmahon; Kaveh Jorabchi; Georgetown University

Poster Board #63
(857) Comprehensive, Non-Target Characterization of Environmental Exposome Samples Using GCxGC and High Resolution Time of Flight Mass Spectrometry; James Carlson; Todd Richards; Lorne Fell; Joseph Binkley; LECO Corporation

Poster Board #64
(858) A Matrix-Assisted Laser Desorption/Ionization Zoom-Time-of-Flight Mass Spectrometer; Kelsey Williams; Andrew Schwartz; Steven Ray; The State University of New York at Buffalo; Celgene Corporation

Poster Board #65
(859) Enhanced Online Microwave-Assisted Trypsin Digestion of Proteins; Maria Rivera; Emily Sekera; Troy Wood; Steven Ray; University at Buffalo

Poster Board #66
(860) Enhancing Disaccharide Ion Mobility Separations through Shift Reagents and Frequency Modulation; Kristin Mckenna; Kelsey Morrison; Brian Clowers; Facundo Fernandez; Georgia Institute of Technology; Washington State University

Poster Board #67
(861) Measurement of Desorption Region for Surface Compounds on Low Power Laser-Atmospheric Plasma Soft Ablation System; Yuki Okamoto; Mayuko Yoshida; Satoshi Kohno; Takahiro Iwai; Hidekazu Miyahara; Takaumi Hirata; Koichi Chiba; Akitoshi Okino; FIRST, Tokyo Institute of Technology; Kwansai Gakuin University; University of Tokyo

Poster Board #68
(862) Energy Discrimination in Time-of-Flight Mass Spectrometry; Christopher Brais; Steven Ray; University at Buffalo

Poster Board #69
(863) Serum Metabolic Profiling of a High-Grade Serous Ovarian Cancer (HGSOc) Mouse Model: Insights into Disease Progression; Danning Huang; Yong-Hyun Shim; David Gaul; Jae Yeon Kim; Facundo Fernandez; Georgia Institute of Technology; Indiana University School of Medicine

Poster Board #70
(864) Application of an On-Line Microdialysis Desalting Device for Ms Analysis of Apolipoproteins in Size-Fractionated HDL and LDL Particles; Jacob
Denning; Zsuzsanna Kuklenyik; Center for Disease Control and Prevention
Poster Board #71
(865) The Effects of Temperature-Related Sample Storage Conditions on the Lipid Profile of Human Plasma and Serum; Gregory Reid\textsuperscript{1, 2}; Jon Rees\textsuperscript{2}; Zsuzsanna Kuklenyik\textsuperscript{1}; \textsuperscript{2}Georgia State University; \textsuperscript{2}Centers for Disease Control and Prevention

THURSDAY 11:00 AM - 12:00 PM & 3:10 - 3:50 PM Imperial B
18THPPMICRO Posters 72 - 83
Microscopy and Imaging

Poster Board #72
(866) Characterization of Erosive and Staining Effect of Coffee on Teeth: \textit{in vitro} Study; Condon Law; City University of Hong Kong

Poster Board #73
(867) Photoactivatable BODIPY Probe for Localization-Based Super-Resolution Imaging; Chamari Wijesooriya; Julie Peterson; Pradeep Shrestha; Arthur Winter; Emily Smith; Iowa State University

Poster Board #74
Withdrawn

Poster Board #75
(869) Glyphosate Mediated Disruption on Lipid Organization of Stratum Corneum Skin Model; Tibebe Lemma\textsuperscript{1}; Mateus D. Maximino; Osvaldo N Oliveira Jr; Carlos J.L Constantino; \textit{Università di Sao Paolo}

Poster Board #76
(870) Asymptotically Approaching Routine Operation of Stacked, Mutually-Rotated Grating Spectrometers; Alexander Scheeline; SpectroClick Inc.

Poster Board #77
(871) Probing Depth Resolution of Confocal Raman Microscope Using “Sandwiched” Graphene; Alexander Rzhayevskii; Thermo Fisher Scientific

Poster Board #78
(872) Combining Single Molecule Surface-Enhanced Raman (SERS) and Single Molecule Surface Enhanced Fluorescence Spectroscopy Using Liposome-Gold Conjugates; William Lunn; Ian Bruzas; Zohre Gorunmez; Thomas Beck; Laura Sagle\textsuperscript{2}; \textit{University of Cincinnati}

Poster Board #79
(873) Real-time Molecular Chemical Imaging with Adaptive Conformal Filters; Shawna K. Tazik; Matthew P. Nelson; Patrick J. Treado; Shona Stewart; ChemImage

Poster Board #80
(874) Toward Understanding of the Twist Motions of Dynamin in Live Cells; Kuanwai Chen; Xiaodong Cheng; Bin Dong; Ning Fang; \textit{Georgia State University}

Poster Board #81
(875) Optimized Method of Cutting Polymer Samples for Observing Morphology of Its Cross-Section Using Cryo-Microtome and Cryo-Ion Beam Miller; Sang Uk Lee\textsuperscript{1}; Jong Sun Kim\textsuperscript{1}; Hyo Soon Cho\textsuperscript{1}; Sun Choi\textsuperscript{2}; \textsuperscript{1, 2}Hanwha-Total R&D Center; \textsuperscript{1}Hanwha-Total R&D Center

Poster Board #82
(876) Application of Super Resolution Radial Fluctuation Imaging to Measurement of DNA Hybridization Kinetics; Justin Cooper\textsuperscript{1}; Eric Peterson\textsuperscript{2}; Joel Harris\textsuperscript{3}; \textsuperscript{1}Andor Technology; \textsuperscript{2}University of Utah

Poster Board #83
(877) A Construct for Convenient and Fast Implementation of Laboratory Software and Hardware Automation; Sugato Ray; Carol Hirschmugl; \textit{University of Wisconsin Milwaukee}

THURSDAY 11:00 AM - 12:00 PM & 3:10 - 3:50 PM Imperial B
18THPPMAT Posters 84 - 87
Process Analytical Technology

Poster Board #84
(878) Representative Sampling in Solids and Turbid Media for Quantitative Process Raman Measurements During Continuous or Batch Manufacturing Operations; Karen Esmonde-White\textsuperscript{1}; Carsten Uerpmann\textsuperscript{2}; Sean Gilliam\textsuperscript{1}; Lisa Ganster\textsuperscript{1}; David Strachan\textsuperscript{1}; Ian Lewis\textsuperscript{1}; \textsuperscript{1}Kaiser Optical Systems, Inc.; \textsuperscript{2}Kaiser Optical Systems SARL

Poster Board #85
(879) Quantification of Cocystal in Solid Dosage Forms Using Transmission Raman Spectroscopy; Tatsuo Koide\textsuperscript{1}; Toshiro Fukami\textsuperscript{2}; \textsuperscript{1}Nat. Inst. Health Sci.; \textsuperscript{2}Meiji Pharmaceutical Univ.

Poster Board #86
(880) Monitoring the Composition of Low Activity Nuclear Waste using \textit{in-situ} Measurement Methods; Stefani Kocesvka; Martha Grover; Ronald Rousseau; \textit{Georgia Institute of Technology}

Poster Board #87
(881) Multiparameter Characterization of Semiconductor Process Solutions Using Combination of Spectroscopic Techniques; Jingjing Wang; Chuanman Bai; Guang Liang; Helen Lu; ECI technology

THURSDAY 11:00 AM - 12:00 PM & 3:10 - 3:50 PM Imperial B
18THPPMA Posters 88 - 95
Pharmaceutical Analysis

Poster Board #88
(882) \textit{In situ} Screening for Disproportionation Using NIR Spectroscopy and Custom Humidity Cells; Patrick Wray; James Smith; Stuart Charlton; Sarah Brooks; Mike Tobyn; Andrew Dennis; \textit{Bristol-Myers Squibb Co.}

Poster Board #89
(883) Development and Application of a Generic Approach to Online Blend Monitoring Using NIR Spectroscopy; Patrick Wray; Lucy Hawarden; Andrew Dennis; \textit{Bristol-Myers Squibb Co.}

Poster Board #90
(884) IR Investigation of Terbinafine Interaction With Stratum Corneum Constituents; Yelena Pyatski; Carol Flach; Richard Mendelsohn; \textit{Rutgers University}

Poster Board #91
(885) Factorization of Preparative Protein Chromatograms with Hard-Constraint Multivariate Curve Resolution and Second Derivative Pretreatment; Matthias Rüdt; Sebastian Andris; Robin Schiemer; Jürgen Hubbuch; Karlsruhe Institute of Technology

Poster Board #92
(886) In-Line Monitoring of a Continuous Flowing Powder Stream Using NIR Spectroscopy and Imaging Analysis; Natasha Velez\textsuperscript{1}; Shikhar Mohan\textsuperscript{1}; Carl A. Anderson\textsuperscript{1, 2}; James K. Drennen, III\textsuperscript{1, 2}; \textsuperscript{1}Duquesne University; \textsuperscript{2}Duquesne Ctr for Pharmaceutical Technology

Poster Board #93
(887) Bioprocess Media Trending with Excitation-Emission Fluorescence; John Bobiak\textsuperscript{1}; Jeffrey

Next year: October 13 - 18, 2019, Palm Springs, CA
### TECHNICAL PROGRAM - THURSDAY

#### POSTERS SESSIONS & COFFEE BREAKS 11:00 AM - 12:00 PM & 3:10 - 3:50 PM, Imperial B

**Swanberg**; **Aslih Polanco**; **Bristol-Myers Squibb Co.; Bristol-Myers Squibb**; **Univ. of Massachusetts, Lowell MA**

**Poster Board #94**

(888) **Removal of Ciprofloxacin from Water Using Porous / Hollow Micoresources Particles (PHMS); MnO2 and Core MnCO3/Shell MnO2 (MnO2@MnCO3); Chanbney Leanghef; Anselm Omoike; University of South Carolina-Upstate**

**Poster Board #95**

(889) **Evaluation of Twelve Different Field-Deployable Instrumentation and Low-Cost Technologies for the Detection of Poor Quality Medicines; Stephen Zambrzycki**; **Celine Castile**; **Serena Vickers**; **David Donnelinger**; **Laura Winalski**; **Marcos Bouza**; **William Griggers**; **Matthew Bernier**; **Paul Newton**; **Facundo Fernandez**;

**Poster Board #96**

(890) **A Compressive Sensing Approach to Time Domain Diffuse Raman Spectroscopy for Depth Probing; Sanathana Konugolu Venkata Sekar**; **Michele Lacerenza**; **Cosimo D’Andrea**; **Andrea Farina**; **Gianluca Valentini**;

**Poster Board #97**

(891) **Touch-Free Chemical Analysis of Single**

**THURSDAY 11:00 AM - 12:00 PM & 3:10 - 3:50 PM Imperial B**

**18THPRAM Posters 96 - 103**

**Raman Spectroscopy**

**Poster Board #98**

(892) **Improving RMID Results with Handheld Raman Instrument Control Parameters; Adam Hopkins; Elena Hagemann; Metrohm USA**

**Poster Board #99**

(893) **Photoluminescence, Infrared and Raman Spectroscopy of a Hydrated Uranil Carbonate; Eric Faulques**; **Dale L Perry**; **Nataylia Kalashnyk**; **CNRS, Université de Nantes; UC-Lawrence Berkeley Laboratory**

**Poster Board #100**

(894) **Raman Spectroscopic Analysis of Pigments in Freshwater Mollusk Shells; Grace Sarabia; Bhavya Sharma; University of Tennessee, Knoxville**

**Poster Board #101**

(895) **Determination of Nitrate Concentration in Water Sources in an Agricultural Town in the Philippines Using Raman Spectroscopy; Agnes Zaida Lazo; Marie Josephine De Luna; Ralph Thomas Maestre; University of the Philippines Manila**

**Poster Board #102**

(896) **Optical Resolution Enhancement of High-Bandpass Gratings for Simultaneous Low-Frequency and Fingerprint Raman Spectroscopy Measurements; Jeffrey Oleske; Justin Cooper; Andor Technology**

**Poster Board #103**

(897) **Identification in Field Samples with Multi-Wavelength Raman Spectroscopy; Pratima Kunapareddy; Jacob Grun; Naval Research Laboratory**

---

### TECHNICAL PROGRAM - THURSDAY

#### ORALS 1:30 - 3:10 PM

**Room A706**

**18ATOM07: Atomic Spectroscopy:**

**Solving Problems in Bio/Nano Applications**

**Chairs:** Jose Manuel Costa-Fernando, Martin Resano

**1:30 PM (898) Hyphenation of Asymmetrical Flow Field Flow Fractionation with Elemental Mass Spectrometry for Characterization of Complex Mixtures of Engineered Nanoparticles; Jose Manuel Costa-Fernando; Pablo Llano; Borja Moreira; Laura Cid; Jorge Ruiz; University of Oviedo**

**1:50 PM (899) The Potential of Reference Methodology in Underpinning Selenium Speciation Measurements in Clinical Applications; M. Estela Del Castillo Busto; Christian Ward-Deitrich; Heidi Goenaga-Infante; LGC**

**2:10 PM (900) Microsampling Approaches for Isotopic Analysis: Application to Wilson’s Disease; Carmen Garcia Poyo**; **Martin Resano**; **Maitê Amandenda**; **Bénédicte Lelievre**; **Sylvain Beral**; **Jérome Frayret**; **Christophe Pécheyran**;

**2:30 PM (901) Finding new ICP-MS Paradigm for Absolute and Generic Quantification of Proteins and Post-Translational Modifications; Francisco Calderon Celis; Jorge Ruiz Encinar; University of Oviedo**

**2:50 PM (902) Further Development of the Liquid Sampling - Atmospheric Pressure Glow Discharge (LS-APGD) Microplasma: Coupling with a Triple Quadrupole**

**Room L503**

**18CHEM01: New Frontiers in Chemometrics**

**Chair:** Peter Harrington

**1:30 PM (903) PCA Guided Analyses: Combining MS Fingerprinting with Metabolomics; James Harney; Jianghao Sun; Ping Geng; Pei Chen; US Department of Agriculture**

**1:50 PM (904) Spectroscopic Studies of Copper-Based Pigments; Marcie Wiggins**; **Emma Heath**; **Mengyu Liu**; **Catherine Matsen**; **Chang Liu**; **Jocelyn Alcantara-Garcia**; **Karl Booksh**; **University of Delaware; Winterthur Museum; The Palace Museum**

**2:10 PM (905) Potency Determination in Ground Cannabis Flower Using Near-Infrared Spectroscopy; Ariel Bohman-Paolo; Doug Townsend; Robert Packer; PerkinElmer**

**2:30 PM (906) Fuzzy Classifiers for Diagnosis of Patients with Chronic Kidney Disease; Zhuyong Zhang**; **Zewei Chen**; **Peter Harrington**; **Capital Normal University; Ohio University**

**2:50 PM (907) Deep Learning Algorithms Applied to Small Spectral Datasets; Peter Harrington; Ohio University**
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:30 PM</td>
<td>18CTP03: K12 STEM Education: Inspiration, Innovation</td>
<td>Opening the Door: When Science Meets the Greater Community</td>
<td>Barbara Smith; Joel Lusk; Christina Forbes; Jonathan Jackson; Arizona State University</td>
</tr>
<tr>
<td>1:50 PM</td>
<td>18IR02: Applications of Nanoscale IR Spectroscopy to Polymeric Materials</td>
<td>A Look Inside the Vertex Learning Lab – Inspiring Students and Supporting the Next Generation of STEM Professionals in Boston and Beyond</td>
<td>Melodie Knowlton; Vertex Pharmaceuticals, Inc.</td>
</tr>
<tr>
<td>2:10 PM</td>
<td>Students, Scientists, and Physicians as an Integrated Care Team for Mental Health</td>
<td>Analytical Chemistry? Sounds Painful!</td>
<td>Chris Pierret; Joanna Yang; Louis Joseph; Naima Yusuf; Tejinder Khasla; Mayo Clinic-Rochester; Mayo Clinic-Jacksonville; Parrish Medical Center; FL</td>
</tr>
<tr>
<td>2:30 PM</td>
<td>STEM Outreach: Inspiration and Perspiration</td>
<td>The Value of Using Take Your Child To Work Day as a STEM Education Strategy</td>
<td>Sean Wasylyk; OncobioLigics</td>
</tr>
<tr>
<td>2:50 PM</td>
<td>Teachers, Scientists, and Physicians as an Integrated Care Team for Mental Health</td>
<td>Teachers, Scientists, and Physicians as an Integrated Care Team for Mental Health</td>
<td>Thomas Albrecht; Ricardo Ruiz; Lei Wan; Parrish Medical Center; FL</td>
</tr>
<tr>
<td>2:50 PM</td>
<td>AFM-IR Provides New Insights into Flexible Packaging Films</td>
<td>Photothermal Infrared Spectroscopy: Exploring New Opportunities for Flexible Packaging Films</td>
<td>Mark Rickard; Gregory Meyers; Carl Reinhardt; Rajesh Paradkar; Dow Chemical</td>
</tr>
<tr>
<td>2:10 PM</td>
<td>Quantitative Chemical Analysis at the Nanoscale</td>
<td>PTIR Nanospectroscopy of Organic Matter in an Antarctic Micrometeorite</td>
<td>Jeremie Mathurin; Ariane Deniset-Besseau; Thomas Pino; Cécile Engrand; Jean Duprat; Alexandre Dazzi; Emmanuel Dartois; LCP; Paris Saclay University; Orsay; ISMO, Paris Saclay University; Orsay; CSNSM, Paris Saclay University; Orsay</td>
</tr>
<tr>
<td>2:50 PM</td>
<td>Chemically Selective IR-AFM Imaging for Advanced Lithography Techniques</td>
<td>In situ Near-Infrared Spectroscopy of Siloxane Condensation Reactions</td>
<td>Bruno Bousquet; Frederic Pelascini; Vincent Motto-Ros; Cella, University of Bordeaux CNRS CEA; CRITT Materialis Alsace; ILM UMR 5306, University of Lyon CNRS</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>18LIBS10: Method Validation</td>
<td>Standardization in LIBS: A Dream?</td>
<td>Bruno Bousquet; Frederic Pelascini; Vincent Motto-Ros; Cella, University of Bordeaux CNRS CEA; CRITT Materialis Alsace; ILM UMR 5306, University of Lyon CNRS</td>
</tr>
<tr>
<td>1:50 PM</td>
<td>Error Analysis in Optimization Problems</td>
<td>Optimizing LIBS Data Preprocessing for Optimal Prediction Accuracy</td>
<td>Jhanis Gonzalez; Amanda Dos Santos Augusto; Dayana Oroppeza; Dayana Oroppeza; Jose R. Cirinos; Richard E. Russo; Vassilia Zorba; Applied Spectra, Inc.; Lawrence Berkeley National Laboratory; Federal University of Sao Carlos. Brazil</td>
</tr>
<tr>
<td>2:10 PM</td>
<td>Improved Algorithm for Calibration-Free Laser-Induced Breakdown Spectroscopy</td>
<td>Protocol Scheme for the Direct Analysis of Solid Samples by Laser Ablation-Inductively Coupled Optical Emission Spectroscopy (LA-ICP OES) and Laser-Induced Breakdown Spectroscopy (LIBS)</td>
<td>Sergei Shabanov; Jenaan Maali; University of Florida; Tobias Voelker; BAM</td>
</tr>
<tr>
<td>2:30 PM</td>
<td>Optimizing LIBS Data Preprocessing for Optimal Prediction Accuracy</td>
<td>The Value of Using Take Your Child To Work Day as a STEM Education Strategy</td>
<td>Shawn Chen; Mark Rickard; Dow Chemical</td>
</tr>
<tr>
<td>2:50 PM</td>
<td>Protocol Scheme for the Direct Analysis of Solid Samples by Laser Ablation-Inductively Coupled Optical Emission Spectroscopy (LA-ICP OES) and Laser-Induced Breakdown Spectroscopy (LIBS)</td>
<td>AFM-IR Provides New Insights into Flexible Packaging Films</td>
<td>Mark Rickard; Gregory Meyers; Carl Reinhardt; Rajesh Paradkar; Dow Chemical</td>
</tr>
<tr>
<td>2:50 PM</td>
<td>Deep Top-down Proteomics Using Capillary Zone Electrophoresis-Tandem Mass Spectrometry</td>
<td>In situ Near-Infrared Spectroscopy of Siloxane Condensation Reactions</td>
<td>Shawn Chen; Mark Rickard; Dow Chemical</td>
</tr>
<tr>
<td>2:10 PM</td>
<td>Phosphoproteomic Study of TOR Inhibition in Chlamydomonas</td>
<td>Optimizing LIBS Data Preprocessing for Optimal Prediction Accuracy</td>
<td>Jhanis Gonzalez; Amanda Dos Santos Augusto; Dayana Oroppeza; Dayana Oroppeza; Jose R. Cirinos; Richard E. Russo; Vassilia Zorba; Applied Spectra, Inc.; Lawrence Berkeley National Laboratory; Federal University of Sao Carlos. Brazil</td>
</tr>
<tr>
<td>2:50 PM</td>
<td>Quantitative Top Down Proteomics Reveals the Proteome Specificity of Post-translational Modification Mediating Enzymes.</td>
<td>Optimizing LIBS Data Preprocessing for Optimal Prediction Accuracy</td>
<td>Jhanis Gonzalez; Amanda Dos Santos Augusto; Dayana Oroppeza; Dayana Oroppeza; Jose R. Cirinos; Richard E. Russo; Vassilia Zorba; Applied Spectra, Inc.; Lawrence Berkeley National Laboratory; Federal University of Sao Carlos. Brazil</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Peripheral Pathways Implicated in Alzheimer’s Disease</td>
<td>Peripheral Pathways Implicated in Alzheimer’s Disease</td>
<td>Rene Robinson; Vanderbilt University</td>
</tr>
<tr>
<td>1:50 PM</td>
<td>Establishing a Roadmap for Brain-Based Protein Biomarkers in Alzheimer’s Disease</td>
<td>Quantitative Top Down Proteomics Reveals the Proteome Specificity of Post-translational Modification Mediating Enzymes.</td>
<td>Nicholas Seyfried; Moatian Zhou; Ping Lingyan; Duc Duong; Eric Dammer; Marla Gearing; James Lah; Allan Levey; Emory University School of Medicine</td>
</tr>
<tr>
<td>2:30 PM</td>
<td>Phosphoproteomic Study of TOR Inhibition in Chlamydomonas</td>
<td>Optimizing LIBS Data Preprocessing for Optimal Prediction Accuracy</td>
<td>Jhanis Gonzalez; Amanda Dos Santos Augusto; Dayana Oroppeza; Dayana Oroppeza; Jose R. Cirinos; Richard E. Russo; Vassilia Zorba; Applied Spectra, Inc.; Lawrence Berkeley National Laboratory; Federal University of Sao Carlos. Brazil</td>
</tr>
<tr>
<td>2:50 PM</td>
<td>Quantitative Top Down Proteomics Reveals the Proteome Specificity of Post-translational Modification Mediating Enzymes.</td>
<td>Optimizing LIBS Data Preprocessing for Optimal Prediction Accuracy</td>
<td>Jhanis Gonzalez; Amanda Dos Santos Augusto; Dayana Oroppeza; Dayana Oroppeza; Jose R. Cirinos; Richard E. Russo; Vassilia Zorba; Applied Spectra, Inc.; Lawrence Berkeley National Laboratory; Federal University of Sao Carlos. Brazil</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>Error Analysis in Optimization Problems</td>
<td>Optimizing LIBS Data Preprocessing for Optimal Prediction Accuracy</td>
<td>Jhanis Gonzalez; Amanda Dos Santos Augusto; Dayana Oroppeza; Dayana Oroppeza; Jose R. Cirinos; Richard E. Russo; Vassilia Zorba; Applied Spectra, Inc.; Lawrence Berkeley National Laboratory; Federal University of Sao Carlos. Brazil</td>
</tr>
<tr>
<td>1:50 PM</td>
<td>Improved Algorithm for Calibration-Free Laser-Induced Breakdown Spectroscopy</td>
<td>Protocol Scheme for the Direct Analysis of Solid Samples by Laser Ablation-Inductively Coupled Optical Emission Spectroscopy (LA-ICP OES) and Laser-Induced Breakdown Spectroscopy (LIBS)</td>
<td>Sergei Shabanov; Jenaan Maali; University of Florida; Tobias Voelker; BAM</td>
</tr>
<tr>
<td>2:10 PM</td>
<td>Optimizing LIBS Data Preprocessing for Optimal Prediction Accuracy</td>
<td>Optimizing LIBS Data Preprocessing for Optimal Prediction Accuracy</td>
<td>Jhanis Gonzalez; Amanda Dos Santos Augusto; Dayana Oroppeza; Dayana Oroppeza; Jose R. Cirinos; Richard E. Russo; Vassilia Zorba; Applied Spectra, Inc.; Lawrence Berkeley National Laboratory; Federal University of Sao Carlos. Brazil</td>
</tr>
<tr>
<td>2:30 PM</td>
<td>Optimizing LIBS Data Preprocessing for Optimal Prediction Accuracy</td>
<td>Optimizing LIBS Data Preprocessing for Optimal Prediction Accuracy</td>
<td>Jhanis Gonzalez; Amanda Dos Santos Augusto; Dayana Oroppeza; Dayana Oroppeza; Jose R. Cirinos; Richard E. Russo; Vassilia Zorba; Applied Spectra, Inc.; Lawrence Berkeley National Laboratory; Federal University of Sao Carlos. Brazil</td>
</tr>
<tr>
<td>2:50 PM</td>
<td>Optimizing LIBS Data Preprocessing for Optimal Prediction Accuracy</td>
<td>Optimizing LIBS Data Preprocessing for Optimal Prediction Accuracy</td>
<td>Jhanis Gonzalez; Amanda Dos Santos Augusto; Dayana Oroppeza; Dayana Oroppeza; Jose R. Cirinos; Richard E. Russo; Vassilia Zorba; Applied Spectra, Inc.; Lawrence Berkeley National Laboratory; Federal University of Sao Carlos. Brazil</td>
</tr>
</tbody>
</table>
THURSDAY 1:30 PM - 3:10 PM Room A704
18PMA10: Spectroscopy for Biopharma Process Monitoring and Control
Chair: Tony Wang

1:30 PM (933) Raman Spectroscopy for Bioprocesses: How Hardware, Sampling and Data Analysis Decisions Drive Success; Segey Mozharov; Brian Marquardt; Bharat Mankani; MarqMetrix Inc.
1:50 PM (934) Advancing Manufacturing Process Robustness and Control Using Raman Spectroscopy; Michelle Lozada; Tony Wang; Michelle Burgos; Amgen
2:10 PM (935) Advancing Raman Spectroscopy Beyond In-Process Glucose Control of Commercial Cell Culture Processes; Daniel Hill; Saly Romero-Torres; Elliott Schmitt; Kacshif Ahmed; Biogen, Inc.
2:30 PM (936) Advantages of Dual-Wavelength Raman for Fluorescence Suppression; Stephen Hussey; Boris Wezisla; Katharina Napp; Anton Paar
2:50 PM (937) Two Approaches to Implement FTNIR Spectroscopy as a Process Control/monitor Tool – At-Line and In-Line; Michael Kleimann; ABB Automation GmbH

THURSDAY 1:30 PM - 3:10 PM Room L508
18SPECIAL05: Celebrating the FACSS Membership of CLIRSPEC
Chair: Nick Stone

1:30 PM (943) Prospects for Real-Time in vivo Raman Diagnostics; Nick Stone; University of Exeter
1:50 PM (944) Infrared Spectral Histopathology of H&E Stained Tissue on Glass Slides; Peter Gardner1; Mike Pilling1; Alex Henderson1; Peter Gardner; Noel Clarke2; The University of Manchester; The Christie Hospital NHS trust
2:10 PM (945) Assessment of Human Embryonic Stem Cell-Derived Pancreatic Cells Cultured for Transplantation Using Raman Spectroscopic Analysis; Michael Blades1; Shreyas Rangan1, 2; H. Georg Schulze1; Timothy Kieffer1; James M. Piret1, 2; Robin F. B. Turner2; Martha Vardaki2; Michael Smith Laboratories, UBC; University of British Columbia
2:30 PM (946) Ready for the Clinic? Translating Serum Spectroscopic Diagnostics; Matthew Baker; University of Strathclyde
2:50 PM (947) SERS Based Biofluid Spectro-Diagnostics: Towards the Development of a Heparin-Induced Thrombocytopenia Assay; Soumik Siddhanta1; Zufang Huang1, 2; Gang Zheng1; Thomas Kickler2; Ishan Barman1, 3; Johns Hopkins University; Fujian Normal University; Johns Hopkins University School of Medicine

THURSDAY 1:30 PM - 3:10 PM Room A704
18RAM15: Joint Pittcon/FACSS Session: Raman Spectroscopy and Forensics
Chair: Igor K. Lednev

1:30 PM (938) Raman Point-of-Care Analysis; Juergen Popp1, 2; Leibniz Institute of Photonic Technology e.V. Jena; Institute of Physical Chemistry, FSU Jena
1:50 PM (939) Development of Deep UV Raman Standoff Trace Explosive Detection Instruments and Methodologies; Sanford Asher; Sergei Bykov; Katie Gares; Kyle Hutziger; University of Pittsburgh
2:10 PM (940) The Use of Spatially-Offset Raman Spectroscopy (SORS) To Identify Unknown Threats Through Opaque Containers; Eric Roy; Agilent Technologies
2:30 PM (941) The Detection and Identification of Organic Gunshot Residue via Fluorescence and Raman Imaging Microscopy for Forensic Purposes; Shelby Khandasammy1; Alex Rzhkovskii2; Igor K. Lednev1; University at Albany, SUNY; Thermo Fisher Scientific
2:50 PM (942) Non-Destructive and Rapid Characterization of Bloodstains; Rekha Gautam; Maggie O’Connor; Kiana Jansen; Joseph Hodge; Giju Thomas1; Christine O’Brien1; Isaac Pence1; Anita Mahadevan-Jansen; Vanderbilt University

Next year: October 13 - 18, 2019, Palm Springs, CA
### TECHNICAL PROGRAM - THURSDAY
**THURSDAY 3:45 PM - 5:50 PM Imperial A**
**PLENARY SESSION**
**18AWD09: FACSS Innovation Awards**
Chair: Garth Simpson

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:45 PM</td>
<td>Presentation of the FACSS Distinguished Service Award</td>
</tr>
<tr>
<td>3:50 PM</td>
<td>PCR-Free miRNA Profiling Technologies: A Liquid Biopsy Platform; Hsueh-Chia Chang; Satyajyoti Senapati; Ceming Wang; Zeinab Ramshani; Katherine Richards; David Go; Reggie Hill; University of Notre Dame</td>
</tr>
<tr>
<td>4:20 PM</td>
<td>Detection of anti-E. coli Heavy-Metal Conjugated Antibodies on Lateral Flow Assay Material Using Laser-Induced Breakdown Spectroscopy (LIBS) and Laser Ablation Inductively Coupled Optical Emission Spectroscopy (LA-ICP-OES); Carmen Gondhalekar1; Iyll-Joon Doh1; Bartek Rajwa1; Euiwon Bae1; Valery Patsekin1; Larry Stanker2; Xianglei Mao2; Vassilia Zorba2; Richard Russo2; J. Paul Robinson; 1Purdue University; 2Lawrence Berkeley National Laboratory; 3United States Department of Agriculture</td>
</tr>
<tr>
<td>4:50 PM</td>
<td>Electrically Triggered Water-in-Oil Droplets for Serial Femtosecond Crystallography; Alexandra Ros1, 2; Daihyun Kim1, 2; Austin Echelmeier1, 2; Jorvani Cruz Villarreal1, 2; Sahir Gandhi1, 2; Ana Egatz-Gomez; 1School of Molecular Sciences, ASU; 2Center for Applied Structural Discovery, ASU</td>
</tr>
</tbody>
</table>

### TECHNICAL PROGRAM - FRIDAY
**FRIDAY 7:45 - 9:45 AM Room A703-704**
**PLENARY SESSION**
The Science of Science Fiction
Chair: Karen Esmonde-White

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:30 AM</td>
<td>Wake-up Coffee and pastries in room A703-704</td>
</tr>
<tr>
<td>7:45 AM</td>
<td>Award Presentations</td>
</tr>
<tr>
<td></td>
<td>Innovation Award Announcement</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>The End of Science, Big Data, and the Rise of Machine Intelligence; Peter Harrington; OHIO CICI</td>
</tr>
<tr>
<td>8:30 AM</td>
<td>Star Trek Tricorder - Still Science Fiction or Soon Reality!?; Juergen Popp1, 2; 1Leibniz Institute of Photonic Technology; 2Friedrich Schiller University Jena</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>Size Really Does Matter; Duncan Graham; University of Strathclyde</td>
</tr>
<tr>
<td>9:30 AM</td>
<td>Preview of SciX 2019 in Palm Springs; Mark Hayes and Garth Simpson, SciX 2019 Team</td>
</tr>
<tr>
<td>Index of Authors</td>
<td>Page #</td>
</tr>
<tr>
<td>------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Abdellatif, Marwa</td>
<td>94</td>
</tr>
<tr>
<td>Abdul-Rahman, Nama-Hawwa</td>
<td>540</td>
</tr>
<tr>
<td>Abel, Robin</td>
<td>310</td>
</tr>
<tr>
<td>Abraham, Alyssa</td>
<td>802</td>
</tr>
<tr>
<td>Abraham, Alyssa</td>
<td>803</td>
</tr>
<tr>
<td>Achenine, Luke</td>
<td>87</td>
</tr>
<tr>
<td>Acosta-Maeda, Tayro</td>
<td>567</td>
</tr>
<tr>
<td>Acosta-Maeda, Tayro, Hawwa</td>
<td>568</td>
</tr>
<tr>
<td>Acras, San</td>
<td>663</td>
</tr>
<tr>
<td>Acunier, Cagatay</td>
<td>688</td>
</tr>
<tr>
<td>Adams, Kristl</td>
<td>819</td>
</tr>
<tr>
<td>Adams, Tayloria</td>
<td>73</td>
</tr>
<tr>
<td>Adams, Tayloria N.G.</td>
<td>622</td>
</tr>
<tr>
<td>Adar, Fran</td>
<td>404</td>
</tr>
<tr>
<td>Addeoju-Bello, Aderonke</td>
<td>779</td>
</tr>
<tr>
<td>Afseth, Christoph</td>
<td>829</td>
</tr>
<tr>
<td>Ahmed, Irfan, Ijebu</td>
<td>778</td>
</tr>
<tr>
<td>Ahmed, Ishaq</td>
<td>827</td>
</tr>
<tr>
<td>Ahmed, Lia</td>
<td>935</td>
</tr>
<tr>
<td>Ahmed, Rafay</td>
<td>218</td>
</tr>
<tr>
<td>Ahmed, Syed</td>
<td>620</td>
</tr>
<tr>
<td>Ahn, Seong Kyu</td>
<td>613</td>
</tr>
<tr>
<td>Ahn, Seong-Kyu</td>
<td>130</td>
</tr>
<tr>
<td>Ai, Yukai</td>
<td>763</td>
</tr>
<tr>
<td>Ailavajhala, Ramyasri</td>
<td>102</td>
</tr>
<tr>
<td>Alam, M. Anik</td>
<td>264</td>
</tr>
<tr>
<td>Alajaz, Godwin</td>
<td>482</td>
</tr>
<tr>
<td>Akaoka, Katsuaki</td>
<td>599</td>
</tr>
<tr>
<td>Akaoka, Katsuaki</td>
<td>601</td>
</tr>
<tr>
<td>Akin, Dan</td>
<td>348</td>
</tr>
<tr>
<td>Akpovo, Codjo</td>
<td>120</td>
</tr>
<tr>
<td>Akpovo, Codjo, Vaun</td>
<td>597</td>
</tr>
<tr>
<td>Akpovo, Codjo, A</td>
<td>369</td>
</tr>
<tr>
<td>Akpovo, Codjo, A</td>
<td>369</td>
</tr>
<tr>
<td>Alkuy, Vladimir A.</td>
<td>915</td>
</tr>
<tr>
<td>Alam, M. Anik</td>
<td>264</td>
</tr>
<tr>
<td>Alavi, Zara</td>
<td>484</td>
</tr>
<tr>
<td>Alhanese, Steven</td>
<td>531</td>
</tr>
<tr>
<td>Albrecht, Thomas</td>
<td>917</td>
</tr>
<tr>
<td>Alcantara-Garcia, Jocelyn</td>
<td>904</td>
</tr>
<tr>
<td>Alcantara-Garcia, Jocelyn</td>
<td>905</td>
</tr>
<tr>
<td>Alderson, Ben</td>
<td>817</td>
</tr>
<tr>
<td>Aldst, Joseph H.</td>
<td>204</td>
</tr>
<tr>
<td>Alldst, Joseph H.</td>
<td>812</td>
</tr>
<tr>
<td>Alldst, Joseph H.</td>
<td>813</td>
</tr>
<tr>
<td>Ali, Seyed</td>
<td>762</td>
</tr>
<tr>
<td>Alipin, Kartiawati</td>
<td>382</td>
</tr>
<tr>
<td>Allen, Ashley</td>
<td>41</td>
</tr>
<tr>
<td>Allen, Ashley</td>
<td>383</td>
</tr>
<tr>
<td>Allen, Ashley</td>
<td>568</td>
</tr>
<tr>
<td>Allen, Ashley</td>
<td>732</td>
</tr>
<tr>
<td>Allen, Nicolas</td>
<td>341</td>
</tr>
<tr>
<td>Almaier, Guenter</td>
<td>642</td>
</tr>
<tr>
<td>Allred, Siril, P</td>
<td>815</td>
</tr>
<tr>
<td>Almasoud, Najla</td>
<td>689</td>
</tr>
<tr>
<td>Almaviva, Salvadori</td>
<td>361</td>
</tr>
<tr>
<td>Almaviva, Salvadori</td>
<td>362</td>
</tr>
<tr>
<td>Almirall, Jose</td>
<td>21</td>
</tr>
<tr>
<td>Almirall, Jose</td>
<td>485</td>
</tr>
<tr>
<td>Almirall, Jose</td>
<td>538</td>
</tr>
<tr>
<td>Almirall, Jose</td>
<td>538</td>
</tr>
<tr>
<td>Almumgahsi, Haifa</td>
<td>232</td>
</tr>
<tr>
<td>Alrifai, Rim</td>
<td>643</td>
</tr>
<tr>
<td>Alrifai, Rim</td>
<td>741</td>
</tr>
<tr>
<td>Alsalihi, M.S.</td>
<td>607</td>
</tr>
<tr>
<td>Alsalihi, Mohammad Saleh</td>
<td>602</td>
</tr>
<tr>
<td>Altamimi, H.A.</td>
<td>607</td>
</tr>
</tbody>
</table>

Next year: October 13 - 18, 2019, Palm Springs, CA
Cuellar, Maryann............................. 715
Cui, Minchao.................................. 125
Cui, Minchao.................................. 604
Cui, Minchao.................................. 611
Cui, Minchao.................................. 832
Cui, Zhiheng.................................... 139
Culbertson, Christopher...................... 748
Culbertson, Kelsey................................ 57
Culha, Mustafa.................................. 688
Cullum, Brian.................................... 614
Cutri, Nicole..................................... 216
Dadir, Kholoud................................. 576
Dahlberg, Donald............................... 311
Dai, Bin.......................................... 312
Dai, Sheng........................................ 653
Damenito, Michael.............................. 51
Dammer, Eric...................................... 924
Dampf, Sara....................................... 925
D’Andrea, Cosimo................................. 890
Danford, Joseph.................................. 891
Daniel, Alyssa.................................... 387
Daniels, Anthony.................................. 391
Darbari, Jatin..................................... 660
Dartois, Emmanuel.............................. 916
Das, Tapan........................................ 201
Davalos, Rafael.................................. 88
Davalos, Rafael.................................. 397
Davari, Ali......................................... 193
David, Sandryne................................. 303
David, Tania....................................... 335
Davydov, Albert................................. 698
Davydov, Michael............................... 126
Davydov, Mikhail............................... 127
Davydov, Mikhail A.............................. 647
Day, David........................................ 830
Dazzi, Alexander................................. 481
Dazzi, Alexandre.................................. 916
De Angelis, Helen Gomes....................... Maria................................................. 917
De Costa, Bill..................................... 181
De Dominics, Luigi............................... 182
De Giacomo, Alessandro......................... 643
De Giacomo, Alessandro......................... 741
De Haseth, James................................. 348
De Luna, Marie Josephine....................... 895
Deborah, Joshua................................... 538
Deckert, Volker................................... 702
Deckert-Gaudig, Tanja........................... 702
Deguchi, Yoshishiro.............................. 604
Deguchi, Yoshishiro.............................. 611
Deguchi, Yoshishiro.............................. 832
Dehart, Caroline................................. 649
Dehart, Caroline J............................... 650
Dehayem-Massop, Alix........................... 257
Del Castillo Busto, M. Estela............... 899
Dell’Aglio, Marcella............................. 643
Dell’Aglio, Marcella............................. 741
Dennett, Michael................................. 620
Demeuys, Bastien................................. 835
Denuis-Besseau, Ariane......................... 481
Denuis-Besseau, Ariane......................... 916
Denning, Jacob................................... 846
Dennis, Andrew................................... 497
Dennis, Andrew................................... 882
Dennis, Andrew................................... 965
Derracher, Nicholas.............................. 316
Deshpande, Shashank............................ 797
Desjardins, John................................... 103
Desjardins, John................................... 215
Dette, Vincent.................................... 357
Dette, Vincent.................................... 364
Dethomas, Frank.................................. 365
Dett, Michael.................................... 274
Detz, Hermann................................. 951
Devetter, Brent................................... 151
Devetter, Brent................................... 245
Dewine, Dana.................................... 787
Devisimes, Daniëlle............................... 704
Devisser, Lindsey................................. 705
Dharn, Chandra Prakash......................... 826
Di Sabatino, Marisa.............................. 172
Diaz, Daniel...................................... 646
Diaz, Daniel...................................... 742
Dibble, Theodore................................. 228
Dickens, Jason.................................... 196
Diddams, Scott.................................... 480
Didomenico, Anthony............................ 51
Diehm, Juliane.................................... 659
Dietz, Thomas.................................... 365
Dietz, Thomas.................................... 365
Dillner, Ann....................................... 625
Dillon, Egnath..................................... 308
Dillon, Egnath..................................... 735
Dillon, Egnath..................................... 511
Ding, Xiaokang..................................... 610
Diwakar, Prasoon................................. 104
Diwakar, Prasoon................................. 145
Diwakar, Prasoon................................. 146
Diwakar, Prasoon................................. 147
Diwakar, Prasoon................................. 256
Diwakar, Prasoon................................. 354
Diwakar, Prasoon................................. 355
Dluhy, Richard.................................... 356
Dobson, Chris M................................. 699
Dockery, Christopher R.......................... 162
Doh, Ily-Joon...................................... 949
Doig, Andrew...................................... 950
Dolinski, Brian................................... 140
Donais, Mary Kate............................... 141
Donais, Mary Kate............................... 341
Donati, George.................................... 584
Dong, Bin......................................... 874
Donnarumma, Fabrizio............................ 493
Donnellinger, David.............................. 889
Donnelly, Eve...................................... 789
Dooley, Max....................................... 789
Dos Santos Augusto, Amanda................... 922
Doty, Kyle......................................... 189
Doubleday, Peter.................................. 649
Doucet, F.R......................................... 625
Doucet, François.................................. 776
Doucet, François.................................. 832
Douglas, Luke..................................... 89
Douglas, Luke..................................... 89
Douglas, Luke..................................... 89
Drovich, Norman................................. 176
Drees, Carolin.................................... 401
Drennen, James.................................... 326
Drennen, James.................................... 498
Drennen III, James................................. 65
Drennen III, James K............................... 774
Drennen III, James K............................... 886
Driskell, Jeremy................................... 511
Driskell, Jeremy................................... 512
D’Souza, Michelle................................. 148
Du Flussis, Anton.................................. 827
Duan, Jun.......................................... 688
Dubey, Sonali...................................... 358
Dubov, Paul....................................... 255
Duffin, Andrew.................................... 249
Duncan, Matt...................................... 762
Every, Dayna Eliz................................. 391
Exterabrink, Anna............................... 719
Fabre, Cecile...................................... 704
Fabre, Cecile...................................... 834
Fabre, Cecile...................................... 837
Fabre, Cecile...................................... 835
Fabris, Laura....................................... 576
Fabunni, Oluwatosi................................. 162
Falcon, Jessica M................................. 113
Fandino, Jonatan................................. 171
Fandino, Jonatan................................. 400
Fang, Ning......................................... 575
Fang, Ning......................................... 657
Fang, Ning......................................... 709
Fant, Ning.......................................... 874
Farina, Andrea..................................... 890
Farka, Zdenék..................................... 644
Farner Budzard, Jeffrey.......................... 790
Farnsworth, Paul.................................. 299
Farnsworth, Paul B............................... 298
Farooq, Wazirzad Aslam.......................... 602
Fathi, Parinaz.......................... 452
Fattouh, Montia................................... 15
Faulds, Karen...................................... 206
Faulds, Karen...................................... 242
Faulds, Karen...................................... 244
Faulds, Karen...................................... 274
Faulds, Karen...................................... 331
Faulds, Karen...................................... 331
Faulds, Karen...................................... 727
Faulkner, Stefan................................. 811
Faulques, Eric..................................... 893
Fedorov, Alexander............................... 126
Feeney, William................................. 526
Fell, Teng........................................... 610
Fell, Lorena........................................ 857
Feng, Hanzhou..................................... 774
Feng, Lixin......................................... 294
Fenlon, Edward D................................. 150
Fernandez, Facundo............................. 860
Fernandez, Facundo............................. 889
Fernandez, Melissa............................... 145
Fernandez, Melissa............................... 147
Fernandez, Melissa............................... 256
Fernandez, Melissa............................... 257
Fernandez, Melissa............................... 275
Fernandez, Melissa............................... 285
Fernández, Francisco............................. 554
Ferreira Santos, Mauro........................... 518
Feroz, Paul......................................... 519
Figueroa-Navedo, Amanda M.................... 315
Fikret, Marisla.......................... 23
Fikret, Marisla.......................... 820
Filho, Montserrat................................. 362
Fisk, Heidi......................................... 267
Flack, Carol........................................ 269
Flack, Angela M................................. 269
Flanagan, Lisa..................................... 73
Flanagan, Lisa..................................... 79
Flanagan, Lisa..................................... 620
Flanagan, Lisa A................................. 622
Flobacz, Alexi..................................... 623

INDEX OF AUTHORS

91

Next year: October 13 - 18, 2019, Palm Springs, CA
**INDEX OF AUTHORS**

<table>
<thead>
<tr>
<th>Page #</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>94</td>
<td>Kargupta, Rohi</td>
</tr>
<tr>
<td>534</td>
<td>Kargupta, Rohi</td>
</tr>
<tr>
<td>402</td>
<td>Karst, Uwe</td>
</tr>
<tr>
<td>403</td>
<td>Karunathilaka, Sanjeeva R.</td>
</tr>
<tr>
<td>119</td>
<td>Kashikawara, Shunsuke</td>
</tr>
<tr>
<td>706</td>
<td>Kaski, Saara</td>
</tr>
<tr>
<td>707</td>
<td>Kassim, Brittany</td>
</tr>
<tr>
<td>777</td>
<td>Kassim, Brittany</td>
</tr>
<tr>
<td>794</td>
<td>Kato, Atsushi</td>
</tr>
<tr>
<td>379</td>
<td>Kato, Saya</td>
</tr>
<tr>
<td>688</td>
<td>Kaya, Nur Selin</td>
</tr>
<tr>
<td>844</td>
<td>Kazakov, A. Y.</td>
</tr>
<tr>
<td>614</td>
<td>Kazal, Daniel</td>
</tr>
<tr>
<td>20</td>
<td>Kazarian, Sergei</td>
</tr>
<tr>
<td>265</td>
<td>Kazarian, Sergei</td>
</tr>
<tr>
<td>296</td>
<td>Kearns, Hayleigh</td>
</tr>
<tr>
<td>89</td>
<td>Keck, Devin</td>
</tr>
<tr>
<td>649</td>
<td>Keck, Devin</td>
</tr>
<tr>
<td>649</td>
<td>Kelleher, Neil</td>
</tr>
<tr>
<td>787</td>
<td>Keller, Matthew</td>
</tr>
<tr>
<td>817</td>
<td>Kelly, Kristin</td>
</tr>
<tr>
<td>233</td>
<td>Kemp, Laketa</td>
</tr>
<tr>
<td>638</td>
<td>Kemp, Phoebe</td>
</tr>
<tr>
<td>496</td>
<td>Kern, Simon</td>
</tr>
<tr>
<td>497</td>
<td>Kester, Robert</td>
</tr>
<tr>
<td>219</td>
<td>Ketchem, Randal R.</td>
</tr>
<tr>
<td>94</td>
<td>Khafagy, Monazah</td>
</tr>
<tr>
<td>139</td>
<td>Khare, Sanathana</td>
</tr>
<tr>
<td>912</td>
<td>Khasa, Tejinder</td>
</tr>
<tr>
<td>798</td>
<td>Khiterer, Marta</td>
</tr>
<tr>
<td>687</td>
<td>Khuda, Niamat</td>
</tr>
<tr>
<td>947</td>
<td>Kickler, Thomas</td>
</tr>
<tr>
<td>730</td>
<td>Kieffer, Johannes</td>
</tr>
<tr>
<td>945</td>
<td>Kieffer, Timothy</td>
</tr>
<tr>
<td>772</td>
<td>Kiez, Matt</td>
</tr>
<tr>
<td>641</td>
<td>Kilgus, Jakob</td>
</tr>
<tr>
<td>97</td>
<td>Kilpeläinen, Ilkka A.</td>
</tr>
<tr>
<td>85</td>
<td>Kim, Dai Hyun</td>
</tr>
<tr>
<td>86</td>
<td>Kim, Dai Hyun</td>
</tr>
<tr>
<td>950</td>
<td>Kim, Dahiyoun</td>
</tr>
<tr>
<td>192</td>
<td>Kim, Edon</td>
</tr>
<tr>
<td>72</td>
<td>Kim, Estelle</td>
</tr>
<tr>
<td>79</td>
<td>Kim, Hyung Min</td>
</tr>
<tr>
<td>785</td>
<td>Kim, Hyungseok</td>
</tr>
<tr>
<td>863</td>
<td>Kim, Jaeyeon</td>
</tr>
<tr>
<td>875</td>
<td>Kim, Jong Sun</td>
</tr>
<tr>
<td>511</td>
<td>Kim, Jun-Hyun</td>
</tr>
<tr>
<td>509</td>
<td>Kim, Michael</td>
</tr>
<tr>
<td>718</td>
<td>Kim, Stephen</td>
</tr>
<tr>
<td>322</td>
<td>Kimber, James</td>
</tr>
<tr>
<td>208</td>
<td>Kimber, Richards</td>
</tr>
<tr>
<td>135</td>
<td>Kimura, Koki</td>
</tr>
<tr>
<td>97</td>
<td>King, Alistair W. T.</td>
</tr>
<tr>
<td>392</td>
<td>Kircher, Mortiz</td>
</tr>
<tr>
<td>103</td>
<td>Kiridena, Sachindra</td>
</tr>
<tr>
<td>734</td>
<td>Kirkham, Denise</td>
</tr>
<tr>
<td>765</td>
<td>Kirkpatrick, Christine</td>
</tr>
<tr>
<td>351</td>
<td>Kitamura, Ryunosuke</td>
</tr>
<tr>
<td>187</td>
<td>Kjoller, Kevin</td>
</tr>
<tr>
<td>735</td>
<td>Kjoller, Kevin</td>
</tr>
<tr>
<td>937</td>
<td>Kleimann, Michael</td>
</tr>
<tr>
<td>214</td>
<td>Klein, Neal</td>
</tr>
<tr>
<td>134</td>
<td>Klunder, Greg</td>
</tr>
<tr>
<td>819</td>
<td>Klus, Jakub</td>
</tr>
<tr>
<td>367</td>
<td>Klus, Jakub</td>
</tr>
<tr>
<td>636</td>
<td>Klute, Felix David</td>
</tr>
<tr>
<td>401</td>
<td>Klute, Felix David</td>
</tr>
<tr>
<td>605</td>
<td>Knadel, Maria</td>
</tr>
<tr>
<td>606</td>
<td>Knautham, Amareeshwari</td>
</tr>
<tr>
<td>701</td>
<td>Knowles, Tuomas</td>
</tr>
<tr>
<td>699</td>
<td>Knowles, Tuomas J. P.</td>
</tr>
<tr>
<td>909</td>
<td>Knutlon, Melodie</td>
</tr>
<tr>
<td>910</td>
<td>Knutlon, Melodie</td>
</tr>
<tr>
<td>105</td>
<td>Kocaoglu, Ozden</td>
</tr>
<tr>
<td>880</td>
<td>Koecevska, Stefani</td>
</tr>
<tr>
<td>357</td>
<td>Koch Dandolo, Corinna</td>
</tr>
<tr>
<td>617</td>
<td>Koerner, Gurick</td>
</tr>
<tr>
<td>815</td>
<td>Koerner, Anthony</td>
</tr>
<tr>
<td>285</td>
<td>Koganezawa, Tomoyuki</td>
</tr>
<tr>
<td>484</td>
<td>Kohler, Achim</td>
</tr>
<tr>
<td>564</td>
<td>Kohler, Achim</td>
</tr>
<tr>
<td>868</td>
<td>Kohler, Achim</td>
</tr>
<tr>
<td>531</td>
<td>Kohno, Satoshi</td>
</tr>
<tr>
<td>861</td>
<td>Kohno, Satoshi</td>
</tr>
<tr>
<td>363</td>
<td>Kohns, Peter</td>
</tr>
<tr>
<td>365</td>
<td>Kohns, Peter</td>
</tr>
<tr>
<td>879</td>
<td>Koide, Tatsuo</td>
</tr>
<tr>
<td>59</td>
<td>Koirtyohann, Roy</td>
</tr>
<tr>
<td>229</td>
<td>Kojima, Ryosuke</td>
</tr>
<tr>
<td>351</td>
<td>Konagaya, Koji</td>
</tr>
<tr>
<td>642</td>
<td>Kopeika, Tikhakos</td>
</tr>
<tr>
<td>931</td>
<td>Kong, Ralf</td>
</tr>
<tr>
<td>159</td>
<td>Kono, Shunsuke</td>
</tr>
<tr>
<td>788</td>
<td>Konogu Venkata Sekar, Sanathana</td>
</tr>
<tr>
<td>390</td>
<td>Konutham, Amareeshwari</td>
</tr>
<tr>
<td>294</td>
<td>Koratkar, Nikhil</td>
</tr>
<tr>
<td>212</td>
<td>Korter, Timothy</td>
</tr>
<tr>
<td>213</td>
<td>Korter, Timothy</td>
</tr>
<tr>
<td>202</td>
<td>Koulov, Atanas</td>
</tr>
<tr>
<td>203</td>
<td>Kovacs, Gy</td>
</tr>
<tr>
<td>562</td>
<td>Kowalczyk, Ewa</td>
</tr>
<tr>
<td>664</td>
<td>Krafft, Christoph</td>
</tr>
<tr>
<td>561</td>
<td>Kranz, Christine</td>
</tr>
<tr>
<td>301</td>
<td>Kratzter, Jan</td>
</tr>
<tr>
<td>562</td>
<td>Krause, Mary</td>
</tr>
<tr>
<td>698</td>
<td>Kraye, Andre</td>
</tr>
<tr>
<td>658</td>
<td>Krishnan, Sushmitha</td>
</tr>
<tr>
<td>518</td>
<td>Kristmann, Christian</td>
</tr>
<tr>
<td>104</td>
<td>Krug, Daniell</td>
</tr>
<tr>
<td>178</td>
<td>Krylov, Sergey</td>
</tr>
<tr>
<td>698</td>
<td>Krylyuk, Sergey</td>
</tr>
<tr>
<td>612</td>
<td>Kubitz, Simon</td>
</tr>
<tr>
<td>707</td>
<td>Kubitz, Simon</td>
</tr>
<tr>
<td>821</td>
<td>Kubitz, Simon</td>
</tr>
<tr>
<td>353</td>
<td>Kucukkieskin, Efe</td>
</tr>
<tr>
<td>630</td>
<td>Kudelski, Andrzej</td>
</tr>
<tr>
<td>13</td>
<td>Kuenzl, Stephen</td>
</tr>
<tr>
<td>740</td>
<td>Le Bihan, Olivier</td>
</tr>
<tr>
<td>888</td>
<td>Leatheng, Chanbornay</td>
</tr>
<tr>
<td>763</td>
<td>Li, Yingxin</td>
</tr>
<tr>
<td>764</td>
<td>Li, Zhanjie</td>
</tr>
<tr>
<td>839</td>
<td>Lianbo, Guo</td>
</tr>
<tr>
<td>881</td>
<td>Liang, Guang</td>
</tr>
<tr>
<td>293</td>
<td>Liao, Kuo-Tang</td>
</tr>
<tr>
<td>482</td>
<td>Li, Tianming</td>
</tr>
<tr>
<td>476</td>
<td>Li, Zhiyetian</td>
</tr>
<tr>
<td>177</td>
<td>Li, Xiong Fang</td>
</tr>
<tr>
<td>478</td>
<td>Lim, Hwan Hong</td>
</tr>
<tr>
<td>357</td>
<td>Lin, Jingjun</td>
</tr>
<tr>
<td>629</td>
<td>Lin, Nancy</td>
</tr>
<tr>
<td>312</td>
<td>Lindner, Stefan</td>
</tr>
<tr>
<td>924</td>
<td>Lingyan, Ping</td>
</tr>
<tr>
<td>220</td>
<td>Linquist, Nathan</td>
</tr>
<tr>
<td>700</td>
<td>Linsmeier, Ch.</td>
</tr>
<tr>
<td>826</td>
<td>Linsmeier, Christian</td>
</tr>
<tr>
<td>749</td>
<td>Linz, Tom</td>
</tr>
<tr>
<td>606</td>
<td>Lisitsa, Vladimir</td>
</tr>
<tr>
<td>904</td>
<td>Liu, Chang</td>
</tr>
<tr>
<td>609</td>
<td>Liu, Chunhao</td>
</tr>
<tr>
<td>604</td>
<td>Liu, Jiping</td>
</tr>
<tr>
<td>370</td>
<td>Lee, Daeeun</td>
</tr>
<tr>
<td>73</td>
<td>Lee, Do-Hyun</td>
</tr>
<tr>
<td>620</td>
<td>Lee, Kayla</td>
</tr>
<tr>
<td>254</td>
<td>Lee, Kyung eun</td>
</tr>
<tr>
<td>508</td>
<td>Lee, Martin</td>
</tr>
<tr>
<td>875</td>
<td>Lee, Sang Uk</td>
</tr>
<tr>
<td>207</td>
<td>Lee, See Hi</td>
</tr>
<tr>
<td>136</td>
<td>Lee, Young Jong</td>
</tr>
<tr>
<td>152</td>
<td>Lee, Young Jong</td>
</tr>
<tr>
<td>160</td>
<td>Lee, Young Jong</td>
</tr>
<tr>
<td>250</td>
<td>Lee, Young Jong</td>
</tr>
<tr>
<td>253</td>
<td>Lee, Young Jong</td>
</tr>
<tr>
<td>194</td>
<td>Legnaioli, Stefano</td>
</tr>
<tr>
<td>195</td>
<td>Lei, Yu</td>
</tr>
<tr>
<td>641</td>
<td>Leitner, Michael</td>
</tr>
<tr>
<td>700</td>
<td>Leu, Zhendong</td>
</tr>
<tr>
<td>106</td>
<td>Lemma, Tibebe</td>
</tr>
<tr>
<td>869</td>
<td>Lemma, Tibebe</td>
</tr>
<tr>
<td>751</td>
<td>Lemos, Tony</td>
</tr>
<tr>
<td>799</td>
<td>Lemos, Tony</td>
</tr>
<tr>
<td>870</td>
<td>Lendel, Bernhard</td>
</tr>
<tr>
<td>312</td>
<td>Lendel, Bernhard</td>
</tr>
<tr>
<td>825</td>
<td>Lepore, Kate</td>
</tr>
<tr>
<td>921</td>
<td>Lepore, Kate</td>
</tr>
<tr>
<td>505</td>
<td>Leproux, Philippe</td>
</tr>
<tr>
<td>399</td>
<td>Lesniewski, Joseph</td>
</tr>
<tr>
<td>856</td>
<td>Lesniewski, Joseph</td>
</tr>
<tr>
<td>924</td>
<td>Levey, Allan</td>
</tr>
<tr>
<td>701</td>
<td>Levinson, Nick</td>
</tr>
<tr>
<td>531</td>
<td>Levinson, Nick</td>
</tr>
<tr>
<td>199</td>
<td>Lewis, Ian</td>
</tr>
<tr>
<td>175</td>
<td>Lewis, Ian</td>
</tr>
<tr>
<td>878</td>
<td>Lewis, Ian</td>
</tr>
<tr>
<td>266</td>
<td>Lewis, Neil</td>
</tr>
<tr>
<td>139</td>
<td>Li, Chen</td>
</tr>
<tr>
<td>494</td>
<td>Li, Chin Yin</td>
</tr>
<tr>
<td>380</td>
<td>Li, Boyu</td>
</tr>
<tr>
<td>335</td>
<td>Li, Jane</td>
</tr>
<tr>
<td>823</td>
<td>Li, Jiaming</td>
</tr>
<tr>
<td>156</td>
<td>Li, Meng</td>
</tr>
<tr>
<td>32</td>
<td>Li, Tianqi</td>
</tr>
<tr>
<td>519</td>
<td>Li, Xiangpeng</td>
</tr>
<tr>
<td>123</td>
<td>Li, Xiangyou</td>
</tr>
<tr>
<td>191</td>
<td>Li, Xiangyou</td>
</tr>
<tr>
<td>593</td>
<td>Li, Xiangyou</td>
</tr>
<tr>
<td>594</td>
<td>Li, Xiangyou</td>
</tr>
<tr>
<td>823</td>
<td>Li, Xiangyou</td>
</tr>
<tr>
<td>177</td>
<td>Le, Xin-Fang</td>
</tr>
<tr>
<td>479</td>
<td>Li, Young</td>
</tr>
<tr>
<td>137</td>
<td>Li, Ying</td>
</tr>
<tr>
<td>763</td>
<td>Li, Yingxin</td>
</tr>
<tr>
<td>764</td>
<td>Li, Zhanjie</td>
</tr>
<tr>
<td>839</td>
<td>Lianbo, Guo</td>
</tr>
<tr>
<td>881</td>
<td>Liang, Guang</td>
</tr>
<tr>
<td>293</td>
<td>Liao, Kuo-Tang</td>
</tr>
<tr>
<td>482</td>
<td>Li, Tianming</td>
</tr>
<tr>
<td>478</td>
<td>Lim, Hwan Hong</td>
</tr>
<tr>
<td>357</td>
<td>Lin, Jingjun</td>
</tr>
<tr>
<td>629</td>
<td>Lin, Nancy</td>
</tr>
<tr>
<td>312</td>
<td>Lindner, Stefan</td>
</tr>
<tr>
<td>924</td>
<td>Lingyan, Ping</td>
</tr>
<tr>
<td>220</td>
<td>Linquist, Nathan</td>
</tr>
<tr>
<td>700</td>
<td>Linsmeier, Ch.</td>
</tr>
<tr>
<td>826</td>
<td>Linsmeier, Christian</td>
</tr>
<tr>
<td>749</td>
<td>Linz, Tom</td>
</tr>
<tr>
<td>606</td>
<td>Lisitsa, Vladimir</td>
</tr>
<tr>
<td>904</td>
<td>Liu, Chang</td>
</tr>
<tr>
<td>609</td>
<td>Liu, Chunhao</td>
</tr>
<tr>
<td>604</td>
<td>Liu, Jiping</td>
</tr>
</tbody>
</table>
INDEX OF AUTHORS

<table>
<thead>
<tr>
<th>Paper #</th>
<th>Last Name</th>
<th>First Name</th>
<th>Paper #</th>
<th>Last Name</th>
<th>First Name</th>
<th>Paper #</th>
<th>Last Name</th>
<th>First Name</th>
<th>Paper #</th>
<th>Last Name</th>
<th>First Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>191</td>
<td>Liu, Kun</td>
<td></td>
<td>101</td>
<td>Mahadaven-Jansen, Anita</td>
<td></td>
<td>500</td>
<td>Miguez, April</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>904</td>
<td>Liu, Mengyu</td>
<td></td>
<td>391</td>
<td>Mahadaven-Jansen, Anita</td>
<td></td>
<td>109</td>
<td>Millet, Cassidy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>152</td>
<td>Liu, Xiaohui</td>
<td></td>
<td>393</td>
<td>Mahadaven-Jansen, Anita</td>
<td></td>
<td>794</td>
<td>Mills, Olga</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>160</td>
<td>Liu, Xiaohui</td>
<td></td>
<td>393</td>
<td>Mahadaven-Jansen, Anita</td>
<td></td>
<td>551</td>
<td>Miller, Steven</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>651</td>
<td>Liu, Xiaowen</td>
<td></td>
<td>602</td>
<td>Masalimanli, Prof. Vadvil</td>
<td></td>
<td>595</td>
<td>Miller, Steven</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>82</td>
<td>Liu, Yameg</td>
<td></td>
<td>272</td>
<td>Masson, Jean-Francois</td>
<td></td>
<td>842</td>
<td>Miller, Steven</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>264</td>
<td>Liu, Yang</td>
<td></td>
<td>676</td>
<td>Masson, Jean-Francois</td>
<td></td>
<td>843</td>
<td>Miller, Lindsey</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>849</td>
<td>Liu, Zhanfei</td>
<td></td>
<td>725</td>
<td>Masson, Jean-Francois</td>
<td></td>
<td>844</td>
<td>Millhouse, Paul</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>896</td>
<td>Llano, Pablo</td>
<td></td>
<td>101</td>
<td>Masson, Laura</td>
<td></td>
<td>215</td>
<td>Millhouse, Paul</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>663</td>
<td>Locke, Andrea</td>
<td></td>
<td>599</td>
<td>Mastumoto, Ayumu</td>
<td></td>
<td>331</td>
<td>Milligan, Kirsty</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>490</td>
<td>Lombardo-Banke, Camille</td>
<td></td>
<td>600</td>
<td>Maswadeh, Waleed</td>
<td></td>
<td>112</td>
<td>Milligan, Kylie</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>552</td>
<td>Loo, Joseph</td>
<td></td>
<td>916</td>
<td>Mathurin, Jeremie</td>
<td></td>
<td>209</td>
<td>Mills, Sarah</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>357</td>
<td>Lopez, Maxime</td>
<td></td>
<td>333</td>
<td>Matousek, Pavel</td>
<td></td>
<td>93</td>
<td>Mills, Allison</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Lorenz, Malte</td>
<td></td>
<td>490</td>
<td>Majdi, Youssef</td>
<td></td>
<td>378</td>
<td>Mills, Chris</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>194</td>
<td>Lorenzetti, Giulia</td>
<td></td>
<td>786</td>
<td>lacey, Adam M.</td>
<td></td>
<td>103</td>
<td>Mills, Matthew</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>241</td>
<td>Lotfollahi, Mascha</td>
<td></td>
<td>792</td>
<td>Malmstrom, David S.</td>
<td></td>
<td>3</td>
<td>Min, Wei</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>934</td>
<td>Lozaa, Michelle</td>
<td></td>
<td>589</td>
<td>Matsumoto, Yoshishia</td>
<td></td>
<td>18</td>
<td>Min, Wei</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>292</td>
<td>Lu, Hang</td>
<td></td>
<td>933</td>
<td>Mankani, Bharat</td>
<td></td>
<td>506</td>
<td>Min, Wei</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>881</td>
<td>Lu, Helen</td>
<td></td>
<td>766</td>
<td>Mann, Morgan</td>
<td></td>
<td>794</td>
<td>Misawa, Mayumi</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>676</td>
<td>Lu, Mengdi</td>
<td></td>
<td>36</td>
<td>Manolescu, Cristina</td>
<td></td>
<td>932</td>
<td>Misewell, Ellen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>594</td>
<td>Lu, Yongfeng</td>
<td></td>
<td>719</td>
<td>Mans, Jamie</td>
<td></td>
<td>495</td>
<td>Mishe, Pav</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>823</td>
<td>Lu, Yongfeng</td>
<td></td>
<td>668</td>
<td>Manzoni, Natalie</td>
<td></td>
<td>576</td>
<td>Misra, Anupam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>824</td>
<td>Lu, Yongfeng</td>
<td></td>
<td>145</td>
<td>Manzoni, Natalie</td>
<td></td>
<td>570</td>
<td>Misra, Anupam</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>137</td>
<td>Lu, Yuan</td>
<td></td>
<td>147</td>
<td>Manzoni, Natalie</td>
<td></td>
<td>571</td>
<td>Misra, Santosh</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>609</td>
<td>Lu, Yuan</td>
<td></td>
<td>256</td>
<td>Manzoni, Natalie</td>
<td></td>
<td>302</td>
<td>Mistek, Ewelina</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>798</td>
<td>Lu, Zhenyu</td>
<td></td>
<td>354</td>
<td>Manzoni, Natalie</td>
<td></td>
<td>814</td>
<td>Mistek, Ewelina</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>199</td>
<td>Lucas, Herve</td>
<td></td>
<td>355</td>
<td>Manzoni, Natalie</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>715</td>
<td>Lucas, Herve</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>717</td>
<td>Lue, Leo</td>
<td></td>
<td>517</td>
<td>Mao, Elsha</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>Lueellen, Drew</td>
<td></td>
<td>136</td>
<td>Mao, Xiangle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>564</td>
<td>Lukacs, Rozalia</td>
<td></td>
<td>487</td>
<td>Mao, Xiangle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>667</td>
<td>Luman, Julian</td>
<td></td>
<td>949</td>
<td>Mao, Xiangle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>676</td>
<td>Luman, William</td>
<td></td>
<td>950</td>
<td>Mao, Yuanning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>544</td>
<td>Luman, William</td>
<td></td>
<td>308</td>
<td>Marcott, Curtis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>872</td>
<td>Luman, William</td>
<td></td>
<td>187</td>
<td>Marcott, Curtis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>877</td>
<td>Luman, William</td>
<td></td>
<td>735</td>
<td>Marcott, Curtis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>692</td>
<td>Lundgreen, Kim</td>
<td></td>
<td>235</td>
<td>Marcus, Kenneth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>Lunte, Susan</td>
<td></td>
<td>581</td>
<td>Marcus, Kenneth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>Lunte, Susan</td>
<td></td>
<td>680</td>
<td>Marcus, Kenneth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>738</td>
<td>Lunte, Susan</td>
<td></td>
<td>56</td>
<td>Marcus, R. Kenneth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>748</td>
<td>Lunte, Susan</td>
<td></td>
<td>403</td>
<td>Marcus, R. Kenneth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>Luo, Yi</td>
<td></td>
<td>679</td>
<td>Marcus, R. Kenneth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>908</td>
<td>Luo, Yi</td>
<td></td>
<td>614</td>
<td>Marcus, R. Kenneth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>272</td>
<td>Lussier, Felix</td>
<td></td>
<td>238</td>
<td>Maresch, Wade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>725</td>
<td>Lussier, Felix</td>
<td></td>
<td>588</td>
<td>Maresch, Wade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>337</td>
<td>Lycke, Sylvia</td>
<td></td>
<td>330</td>
<td>Margraf, Ulrich</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>197</td>
<td>Lyngberg, Olav</td>
<td></td>
<td>301</td>
<td>Marini, Federico</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>777</td>
<td>Lyow, Nina</td>
<td></td>
<td>302</td>
<td>Marini, Federico</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>314</td>
<td>Ma, Eugene</td>
<td></td>
<td>782</td>
<td>Mark, Michael F.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>766</td>
<td>Ma, Hongyan</td>
<td></td>
<td>266</td>
<td>Markova, Natalia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Ma, Shenli</td>
<td></td>
<td>678</td>
<td>Markovics, E.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Ma, Shengli</td>
<td></td>
<td>267</td>
<td>Mardini, Brian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>594</td>
<td>Ma, Shixiang</td>
<td></td>
<td>261</td>
<td>Marquardt, Brian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>824</td>
<td>Ma, Shixiang</td>
<td></td>
<td>408</td>
<td>Marquardt, Brian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>594</td>
<td>Ma, Yuyang</td>
<td></td>
<td>403</td>
<td>Marquardt, Brian</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>824</td>
<td>Ma, Yuyang</td>
<td></td>
<td>933</td>
<td>Marshall, Kim</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>919</td>
<td>Maal, Jenaan</td>
<td></td>
<td>788</td>
<td>Marteli, Fabrizio</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>547</td>
<td>Maal, Jenaan</td>
<td></td>
<td>156</td>
<td>Martini, Raphael</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>827</td>
<td>Maaza, Malik</td>
<td></td>
<td>603</td>
<td>Martin, Madhavi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>206</td>
<td>Mabbott, Samuel</td>
<td></td>
<td>745</td>
<td>Martin, R. Scott</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>242</td>
<td>Mabbott, Samuel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>247</td>
<td>Maclean, Garett</td>
<td></td>
<td>760</td>
<td>Martinez, David</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>345</td>
<td>Maclean, Garett</td>
<td></td>
<td>761</td>
<td>Martinez, Mauro</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>244</td>
<td>Macleod, Annette</td>
<td></td>
<td>70</td>
<td>Martinez-Duarte, Rodrigo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>197</td>
<td>MacLeod, Piona</td>
<td></td>
<td>381</td>
<td>Martinez-Duarte, Rodrigo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>691</td>
<td>Madupalli, Honey</td>
<td></td>
<td>93</td>
<td>Martinez-Duarte, Rodrigo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>213</td>
<td>Maeno, Yusuke</td>
<td></td>
<td>93</td>
<td>Martinez-Duarte, Rodrigo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>895</td>
<td>Maestre, Ralph Thomas</td>
<td></td>
<td>296</td>
<td>Martinez-Duarte, Rodrigo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>854</td>
<td>Magadanli, Debra</td>
<td></td>
<td>819</td>
<td>Maw, Daniel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>Magee, Cynthia</td>
<td></td>
<td>849</td>
<td>Meyer, Klaser</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>334</td>
<td>Mahadevan, Radhakrishnan</td>
<td></td>
<td>916</td>
<td>Meyers, Gregory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>501</td>
<td>Mahadevan, Radhakrishnan</td>
<td></td>
<td>912</td>
<td>Miao, Tong</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>675</td>
<td>Moreau, Julien</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>898</td>
<td>Moreira, Borja</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>828</td>
<td>Morgan, Michael</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Next year: October 13 - 18, 2019, Palm Springs, CA
**INDEX OF AUTHORS**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Taniguchi, Hideya</td>
<td>349</td>
<td>Tsao, Simon</td>
<td>304</td>
</tr>
<tr>
<td>Tanikawa, Ryoji</td>
<td>95</td>
<td>Tsuchikawa, Satoru</td>
<td>351</td>
</tr>
<tr>
<td>Tannert, Sebastian</td>
<td>788</td>
<td>Tu, Qiang</td>
<td>777</td>
</tr>
<tr>
<td>Tarantola, Alexander</td>
<td>704</td>
<td>Tucker, Matthew J.</td>
<td>150</td>
</tr>
<tr>
<td>Tava, Mark</td>
<td>798</td>
<td>Tufekciz, Natalie</td>
<td>790</td>
</tr>
<tr>
<td>Tai, Li-Lin</td>
<td>209</td>
<td>Turner, Andrew</td>
<td>362</td>
</tr>
<tr>
<td>Taylor, Ashley M</td>
<td>373</td>
<td>Turner, Robin</td>
<td>787</td>
</tr>
<tr>
<td>Taylor, Erik</td>
<td>109</td>
<td>Turner, Robin F.</td>
<td>943</td>
</tr>
<tr>
<td>Taylor, Patrick, A</td>
<td>193</td>
<td>Tuson, Charmaine</td>
<td>813</td>
</tr>
<tr>
<td>Tajik, Shwanna</td>
<td>797</td>
<td>Tzeng, Jeremy</td>
<td>103</td>
</tr>
<tr>
<td>Tajik, Shwanna K.</td>
<td>873</td>
<td>Uba, Isio</td>
<td>624</td>
</tr>
<tr>
<td>Tecklenburg, Mary</td>
<td>691</td>
<td>Ucanskus, Gizev</td>
<td>688</td>
</tr>
<tr>
<td>Thakur, Garima</td>
<td>661</td>
<td>Ueno, Nami</td>
<td>170</td>
</tr>
<tr>
<td>Thapa, Malati</td>
<td>204</td>
<td>Ueno, Nami</td>
<td>170</td>
</tr>
<tr>
<td>Thielges, Megan</td>
<td>515</td>
<td>Uppaa, Carsten</td>
<td>715</td>
</tr>
<tr>
<td>Thoeing, Jorg</td>
<td>8</td>
<td>Uppaa, Carsten</td>
<td>715</td>
</tr>
<tr>
<td>Thomas, David</td>
<td>531</td>
<td>Ugaz, Victor</td>
<td>80</td>
</tr>
<tr>
<td>Thomas, Giusto</td>
<td>43</td>
<td>Ugaz, Victor</td>
<td>80</td>
</tr>
<tr>
<td>Thomas, Giusto</td>
<td>663</td>
<td>Uhlig, Kelley</td>
<td>53</td>
</tr>
<tr>
<td>Thomas, Giulia</td>
<td>76</td>
<td>Unger, Miriam</td>
<td>25</td>
</tr>
<tr>
<td>Thomas, Philip</td>
<td>921</td>
<td>Uono, Ikulono</td>
<td>751</td>
</tr>
<tr>
<td>Thomas, Philip</td>
<td>531</td>
<td>Uregret, Manoj</td>
<td>43</td>
</tr>
<tr>
<td>Thompson, David</td>
<td>117</td>
<td>Urbas, Aaron</td>
<td>744</td>
</tr>
<tr>
<td>Thomson, Kelly</td>
<td>717</td>
<td>Uzair, Umai</td>
<td>535</td>
</tr>
<tr>
<td>Thornton, Blair</td>
<td>793</td>
<td>Valdivio, Jose M.</td>
<td>474</td>
</tr>
<tr>
<td>Throckmorton, Chandra S.</td>
<td>845</td>
<td>Valente, Robert</td>
<td>255</td>
</tr>
<tr>
<td>Throckmorton, Chandra S.</td>
<td>846</td>
<td>Valentin, Gianluca</td>
<td>788</td>
</tr>
<tr>
<td>Tian, Ye</td>
<td>137</td>
<td>Vance, Zeh</td>
<td>806</td>
</tr>
<tr>
<td>Tideng, Lichtenberg, Peter</td>
<td>761</td>
<td>Vandenabeele, Peter</td>
<td>337</td>
</tr>
<tr>
<td>Tipping, William</td>
<td>508</td>
<td>Vanderbeek, Richard</td>
<td>338</td>
</tr>
<tr>
<td>Tiwari, Pravin Kumar</td>
<td>122</td>
<td>Vanderheyden, Barbara</td>
<td>303</td>
</tr>
<tr>
<td>Tiwari, Pravin Kumar</td>
<td>259</td>
<td>Van Belbem, Alex</td>
<td>532</td>
</tr>
<tr>
<td>Tobyn, Mike</td>
<td>882</td>
<td>Van Leeuwen, Ton</td>
<td>101</td>
</tr>
<tr>
<td>Tolstonogova, Yuliya</td>
<td>606</td>
<td>Van Nest, Samantha</td>
<td>667</td>
</tr>
<tr>
<td>Tomosada, Nobuhiro</td>
<td>163</td>
<td>Van Nguyen, Hien</td>
<td>241</td>
</tr>
<tr>
<td>Tonkyn, Russell</td>
<td>151</td>
<td>Van Vlierberghen, Hans</td>
<td>242</td>
</tr>
<tr>
<td>Tonkyn, Russell</td>
<td>245</td>
<td>Van Wermck, Todd</td>
<td>140</td>
</tr>
<tr>
<td>Torres, Jessica</td>
<td>683</td>
<td>Vandenbroucke, Peter</td>
<td>387</td>
</tr>
<tr>
<td>Torres, Karina</td>
<td>90</td>
<td>Vandenbroucke, Peter</td>
<td>387</td>
</tr>
<tr>
<td>Townsend, Doug</td>
<td>905</td>
<td>Vanderbeke, Richard</td>
<td>338</td>
</tr>
<tr>
<td>Trappitsch, Reto</td>
<td>248</td>
<td>Vanderhedyen, Barbara</td>
<td>303</td>
</tr>
<tr>
<td>Trau, Matt</td>
<td>273</td>
<td>Velez, Natasha</td>
<td>886</td>
</tr>
<tr>
<td>Trau, Matt</td>
<td>304</td>
<td>Vendlueck, Michele</td>
<td>699</td>
</tr>
<tr>
<td>Traub, Heike</td>
<td>10</td>
<td>Verkuilen, Jennifer</td>
<td>720</td>
</tr>
<tr>
<td>Trautner, Stefan</td>
<td>320</td>
<td>Vicenzi, Edward</td>
<td>340</td>
</tr>
<tr>
<td>Treado, Patrick</td>
<td>797</td>
<td>Vickery, Serena</td>
<td>859</td>
</tr>
<tr>
<td>Treado, Patrick J.</td>
<td>873</td>
<td>Vickers, Serena</td>
<td>889</td>
</tr>
<tr>
<td>Trebus, Kimberly</td>
<td>704</td>
<td>Vidal, Francisco</td>
<td>645</td>
</tr>
<tr>
<td>Trejos, Tatiana</td>
<td>309</td>
<td>Xiaokuan, Wei</td>
<td>836</td>
</tr>
<tr>
<td>Tremblay, Jean-Philippe</td>
<td>303</td>
<td>Xiaoyao, Wei</td>
<td>836</td>
</tr>
<tr>
<td>Tretyakov, Roman</td>
<td>126</td>
<td>Xier, Tong</td>
<td>318</td>
</tr>
<tr>
<td>Tretyakov, Roman</td>
<td>127</td>
<td>Xiaoyi, Li</td>
<td>328</td>
</tr>
<tr>
<td>Tretyakov, Roman, S.</td>
<td>647</td>
<td>Xie, Xiamin</td>
<td>339</td>
</tr>
<tr>
<td>Trendow, Brian</td>
<td>657</td>
<td>Xie, Yuling</td>
<td>340</td>
</tr>
<tr>
<td>Tribello, Dan</td>
<td>905</td>
<td>Xie, Yuling</td>
<td>340</td>
</tr>
<tr>
<td>Tribolo, Chantal</td>
<td>9</td>
<td>Vogte, Pascal</td>
<td>306</td>
</tr>
<tr>
<td>Trichard, Florian</td>
<td>704</td>
<td>Vogel, David</td>
<td>612</td>
</tr>
<tr>
<td>Trimpin, Sarah</td>
<td>492</td>
<td>Vogel, Frank</td>
<td>74</td>
</tr>
<tr>
<td>Trinklein, Timothy J.</td>
<td>204</td>
<td>Vogel, Frank</td>
<td>807</td>
</tr>
<tr>
<td>Trinhap, Ashish</td>
<td>205</td>
<td>Voigt, David</td>
<td>707</td>
</tr>
<tr>
<td>Trinhap, Ashish</td>
<td>509</td>
<td>Voigt, David</td>
<td>707</td>
</tr>
<tr>
<td>Trinhap, Ashish</td>
<td>510</td>
<td>Vokler, Tobias</td>
<td>551</td>
</tr>
<tr>
<td>Trinhap, Ashish</td>
<td>815</td>
<td>Vokler, Tobias</td>
<td>842</td>
</tr>
<tr>
<td>Trinhap, Ashish</td>
<td>816</td>
<td>Vokler, Tobias</td>
<td>842</td>
</tr>
<tr>
<td>Tripathi, Kiran</td>
<td>817</td>
<td>Vokler, Tobias</td>
<td>842</td>
</tr>
<tr>
<td>Trivedi, Dakshat</td>
<td>100</td>
<td>Von Bergmann, Hubertus</td>
<td>827</td>
</tr>
<tr>
<td>Trombtann, Matthias</td>
<td>12</td>
<td>Voronine, Dmitri</td>
<td>671</td>
</tr>
<tr>
<td>Trudeau, Louis-Eric</td>
<td>272</td>
<td>Vrabel, Jakub</td>
<td>636</td>
</tr>
</tbody>
</table>

**Next year: October 13 - 18, 2019, Palm Springs, CA**

99
<table>
<thead>
<tr>
<th>INDEX OF AUTHORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wollesen De Jonge, Lis</td>
</tr>
<tr>
<td>Wood, Dan</td>
</tr>
<tr>
<td>Wood, Sharla</td>
</tr>
<tr>
<td>Wood, Stephanie</td>
</tr>
<tr>
<td>Wood, Troy</td>
</tr>
<tr>
<td>Woodard, Toni</td>
</tr>
<tr>
<td>Woodward, Patrick</td>
</tr>
<tr>
<td>Woolley, Adam</td>
</tr>
<tr>
<td>Woolley, Adam T</td>
</tr>
<tr>
<td>Wray, Patrick</td>
</tr>
<tr>
<td>Wray, Patrick</td>
</tr>
<tr>
<td>Wray, Patrick</td>
</tr>
<tr>
<td>Wright, Robert</td>
</tr>
<tr>
<td>Wu, Huixiang</td>
</tr>
<tr>
<td>Wu, Judy</td>
</tr>
<tr>
<td>Wu, Judy</td>
</tr>
<tr>
<td>Wu, Ling</td>
</tr>
<tr>
<td>Wu, Ronghu</td>
</tr>
<tr>
<td>Wu, Ronghu</td>
</tr>
<tr>
<td>Wu, Rongrong</td>
</tr>
<tr>
<td>Wu, Si</td>
</tr>
<tr>
<td>Wu, Si</td>
</tr>
<tr>
<td>Wu, Suyang</td>
</tr>
<tr>
<td>Wu, Tongbo</td>
</tr>
<tr>
<td>Wu, Yao</td>
</tr>
<tr>
<td>Wu, Yiren</td>
</tr>
<tr>
<td>Wu, Yizhen</td>
</tr>
<tr>
<td>Wubsht, Sileshi</td>
</tr>
<tr>
<td>Wuji, Evan</td>
</tr>
<tr>
<td>Wundrack, Stefan</td>
</tr>
<tr>
<td>Wundrack, Stefan</td>
</tr>
<tr>
<td>Xi, Wenjing</td>
</tr>
<tr>
<td>Xie, Youan</td>
</tr>
<tr>
<td>Xiangyou, Li</td>
</tr>
<tr>
<td>Xiao, Litifu</td>
</tr>
<tr>
<td>Xiao, Yongjun</td>
</tr>
<tr>
<td>Xiaoan, Zeng</td>
</tr>
<tr>
<td>Xie, Feng</td>
</tr>
<tr>
<td>Xu, Qianming</td>
</tr>
<tr>
<td>Xu, Shuyu</td>
</tr>
</tbody>
</table>
Whether you’re discovering new materials, solving analytical problems or assuring product quality, your spectrometer needs to deliver the definitive answers you’re looking for — fast! Thermo Fisher Scientific goes beyond your expectations with a full line of FTIR, NIR and Raman spectroscopy systems to help you move from sample to answer, faster than ever before.

With the Thermo Scientific™ DXR2xi Raman Imaging Microscope, you get an easy-to-use system that rapidly delivers accurate data – so you spend less time concentrating on measurements and more time on scientific discovery.

Discover. Solve. Assure. thermoﬁsher.com/discover-dxr

For Research Use Only. Not for use in diagnostic procedures. © 2017 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific and its subsidiaries unless otherwise specified.
FACSS PRESENTS

SCIX2019
Make Science Great

OCTOBER 13 - 18, 2019
Palm Springs Convention Center
Palm Springs, California

SciXconference.org