

## CONFERENCE INTRODUCTION

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### **Fundamentals of Atmospheric Pressure Ionization Techniques**

The 2010 Asilomar conference will focus on the fundamentals of atmospheric pressure ionization, broadly defined. The continuing emergence of new ambient ionization methods and the ability to alter the charge states in ESI and AP-MALDI have generated new insights into ionization processes. The fundamentals of multiple charging in ESI and MALDI as well as ionization mechanisms applicable to the developing ambient ionization methods will be debated. The conference aims are to bring together experts in various atmospheric pressure ionization domains to forge new understandings and stimulate ideas for improved ionization approaches

### **FRIDAY, OCTOBER 8, 2010**

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| <b>4:00 pm</b>        | <b>Guest Room Check-in</b> , <i>Asilomar Main Building Lobby</i>  |
| <b>4:00 – 6:00 pm</b> | <b>Conference Registration</b> , <i>Asilomar Main Building Lobby</i>  |
| <b>6:00 – 7:00 pm</b> | <b>Asilomar dinner for on-site lodgers</b> , <i>Crocker Dining Hall.</i><br><i>Asilomar meal ticket required.</i>   |
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| <b>7:15 – 8:30 pm</b> | <b>Electrospray Ionization</b> , <i>Chapel</i><br><i>Richard Cole presiding</i>   |
| <hr/>                 |   |
| 7:15 – 7:20 pm        | Opening Remarks from Conference Organizers<br>Richard Cole and Chuck McEwen   |
| 7:20 – 7:55 pm        | <b>Bruce Thomson</b> , <i>MDS SCIEX</i><br>Ion Ejection from ESI Drops: Ion Evaporation or Charge Residue –<br>20 Years of Debate   |
| 7:55 – 8:30 pm        | <b>Jack Beauchamp</b> , <i>California Institute of Technology</i><br>Fundamentals and Applications of Field Induced Droplet<br>Ionization – Why it is not ESI in Disguise |
| <b>8:30 – 9:30 pm</b> | <b>Informal Reception &amp; Posters</b><br><i>See last two pages for list of posters.</i>   |

## SATURDAY, OCTOBER 9, 2010

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**7:30 – 9:00 am** **Asilomar Breakfast for on-site lodgers**, *Crocker Dining Hall.*  
*Asilomar meal ticket required.*

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**9:00 – 10:10 am** **Multiple Charging in ESI**, *Chapel*  
*Gary Van Berkel presiding*

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9:00 – 9:35 am **Igor Kaltashov**, *University of Massachusetts*  
Do Ionic Charges in ESI MS Provide Useful Information on  
Macromolecular Structure?

9:35 – 10:10 am **Scott A. McLuckey**, *Purdue University*  
Manipulating Charge State Distributions (Almost) in a Mass  
Spectrometer

10:10 – 10:40 am Coffee Break

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**10:40 – 11:50 am** **Supercharging in ESI**, *Chapel*  
*Lloyd Smith presiding*

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10:40 – 11:15 am **Rachel Loo**, *UCLA*  
ESI-Supercharged Peptides, Proteins, and Protein Complexes

11:15 – 11:50 am **Evan Williams**, *UC Berkeley*  
Charging and Supercharging in ESI

**12:00 – 1:00 pm** **Asilomar Lunch for all participants**, *Crocker Dining Hall.*  
*Asilomar meal ticket required.*

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**1:00 – 2:10 pm** **Electrospray and Laserspray**, *Chapel*  
*Rachel Loo presiding*

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1:00 – 1:35 pm **Richard Cole**, *University of New Orleans*  
Regiospecificity in Electrospray Anion Attachment

1:35 – 2:10 pm **Sarah Trimpin**, *Wayne State University*  
Fundamentals of Laserspray Ionization and MAII

2:10 – 2:40 pm Coffee Break

**SATURDAY, OCTOBER 9, 2010, *continued***

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- 2:40 – 3:40 pm**    **Hot Topics I, Chapel**  
*Igor Kaltashov presiding*
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- 2:40 - 3:00 pm    **Leonard Nyadong, National High Magnetic Field Lab**  
Atmospheric Pressure Laser-Induced Acoustic Desorption  
Chemical Ionization (AP/LIAD-CI) Fourier-Transform Ion  
Cyclotron Resonance Mass Spectrometry for the Analysis of  
Petroleum
- 3:00 - 3:20 pm    **Andre Venter, Western Michigan University**  
Practical Implications of the Equilibrium Partition Theory in  
Electrospray Ionization
- 3:20 - 3:40 pm    **Jack A. Syage, Syagen Technology, Inc.**  
Ambient Screening using APPI: APPI/DART and APPI/ASAP
- 6:00 – 7:00 pm**    **Asilomar dinner for on-site lodgers, Crocker Dining Hall.**  
*Asilomar meal ticket required.*
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- 7:15 – 8:25 pm**    **Laser Ablation, Chapel**  
*Sarah Trimpin presiding*
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- 7:15 – 7:50 pm    **Barbara Garrison, Pennsylvania State University**  
Modeling Laser Ablation and Droplet Decomposition
- 7:50 – 8:25 pm    **Akos Vertes, George Washington University**  
Atmospheric Pressure Processes in Laser Ablation Electrospray  
Ionization (LAESI)
- 8:25 – 9:30 pm**    **Informal Reception & Posters**  
Thank you **IonSense, Inc.** sponsor of tonight's reception!  
*See last two pages for list of posters.*

## SUNDAY, OCTOBER 10, 2010

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**7:30 – 9:00 am** **Asilomar Breakfast for on-site lodgers, Crocker Dining Hall.**  
*Asilomar meal ticket required.*

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**9:00 – 10:10 am** **Single Droplet and Transmission DESI**  
*Akos Vertes presiding*

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9:00 – 9:35 am **Lloyd M. Smith, University of Wisconsin**  
Atmospheric Pressure Ionization from Single Droplet Sources

9:35 – 10:10 am **Jennifer Brodbelt, University of Texas at Austin**  
Surface Enhanced Transmission Mode DESI

10:10 – 10:40 am Coffee Break

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**10:40 – 11:50 am** **ELDI and MALDESI**  
*Jennifer Brodbelt presiding*

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10:40 – 11:15 am **Jentaie Shiea, National Sun Yat-Sen University**  
Electrospray Laser Desorption/Ionization (ELDI): Fundamentals  
and New Developments

11:15 – 11:50 am **David Muddiman, North Carolina State University**  
MALDESI: Mechanisms and Applications

**12:00 pm – 1:00 pm** **Asilomar Lunch for all participants, Crocker Dining Hall.**  
*Asilomar meal ticket required.*

**1:00 – 6:00 pm** **Free Time**

**6:00 – 7:00 pm** **Asilomar dinner for on-site lodgers, Crocker Dining Hall**  
*Asilomar meal ticket required.*

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**7:15 – 8:15 pm** **Hot Topics II**  
*Zoltan Takats presiding*

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7:15 - 7:35 pm **Karel Lemr, Palacky University**  
Direct Analysis of Complex Samples by Desorption Nano-  
Electrospray

7:35 - 7:55 pm **Patrick Roach, Pacific Northwest Laboratories**  
Nanospray Desorption Electrospray Ionization Mass Spectrometry

7:55 - 8:15 pm **Richard H. Perry, Stanford University**  
Detection of Reaction Intermediates in Liquids on the Millisecond  
Time Scale Using Desorption Electrospray Ionization

**8:15 – 9:15 pm** **Informal Reception & Posters**  
Thank you **PHOTONIS USA** sponsor of tonight's reception!  
*See pages 13 - 14 for list of posters.*

## MONDAY, OCTOBER 11, 2010

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**7:30 – 9:00 am** **Asilomar Breakfast for on-site lodgers, Crocker Dining Hall.**  
*Asilomar meal ticket required.*

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**9:00 – 10:10 am** **Droplet and Ambient Ionization**  
*Barbara Larsen presiding*

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9:00 – 9:35 am **Zoltan Takats, Justus Liebig University**  
Fast Droplets at Atmospheric Pressure: Sonic Spray, Electrosonic Spray and DESI

9:35 – 10:10 am **Gary Van Berkel, Oak Ridge National Laboratory**  
Liquid Extraction-Based Surface Sampling / Ionization for Mass Spectrometry: Current Capabilities and Future Prospects

10:10 – 10:40 am Coffee Break

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**10:40 – 11:55 am** **Photoionization and Hot Topics III**  
*Jentaie Shiea presiding*

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10:40 – 11:15 am **Risto Kostianen, University of Helsinki**  
Desorption Atmospheric Pressure Photoionization

11:15 – 11:35 am **R. Cameron Dorey, University of Central Arkansas**  
Direct Impact Corona Ionization MS (DICI-MS) (or Spark Source MS on Steroids)

11:35 - 11:55 am **TBD**

**12:00 – 1:00 pm** **Asilomar lunch for all participants, Crocker Dining Hall.**  
*Asilomar meal ticket required.*

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**1:00 – 2:10 pm** **DART**  
*Risto Kostianen presiding*

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1:00 – 1:35 pm **Robert "Chip" Cody, JEOL, USA**  
Deconstructing DART

1:35 – 2:10 pm **Facundo Fernandez, Georgia Institute of Technology**  
Fluid Dynamic Effects and Internal Energy Deposition in DART Ionization

2:10 – 2:40 pm Coffee Break

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## MONDAY, OCTOBER 11, 2010, *continued*

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**2:40 – 4:00 pm**    **ASAP and New Paradigm**  
*David Muddiman presiding*

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2:40 – 3:15 pm    **Barbara Larsen, DuPont**  
Applications of Atmospheric Solids Analysis Probe (ASAP)

3:15 – 3:50 pm    **Charles McEwen, University of the Sciences in Philadelphia**  
A New Paradigm in Ion Production in MS

3:50 – 4:00 pm    **Discussion and Closing Remarks**

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**6:00 – 7:00 pm**    **Banquet, Seascape Room. Banquet ticket required**  
Thank you **nanoLiter LLC** sponsor of the wine served at banquet!

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**7:15 - 9:00 pm**    **After-Dinner Program, Chapel. All are welcome to attend.**  
*Charles McEwen, presiding*

7:15 - 8:00 pm    **Jonathan P. Zehr, Professor of Ocean Sciences, UC Santa Cruz**  
Microbes, Genomics and Proteomics in Ocean and Climate

8:00 - 9:00 pm    Dessert (Informal Reception)

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## TUESDAY, OCTOBER 12, 2010

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**7:30 – 9:00 am**    **Asilomar Breakfast for on-site lodgers, Crocker Dining Hall.**  
*Asilomar meal ticket required.*

**Morning**    **Departures.** Check-out is 11:00 am.

***Thank you for attending the 2010 ASMS Asilomar Conference!***

## POSTER PRESENTATIONS

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Poster #

- 1 **Konstanin Baryluyk**, *ETH Zürich*  
Is the Charge State of Electrosprayed Protein Ions a Direct Indicator of Their Degree of Folding or Unfolding?
- 2 **Jianzhong Chen**, *HJF/AFRL*  
Sodium Iodide as an Additive for Sensitive ESI-MS Analysis of Neutral Lipids in Human Meibomian Gland Secretions
- 3 **Konstanin Chingin**, *Stanford University*  
High-Throughput Screening of Organometallic Reactions by Desorption Electrospray Ionization (DESI)
- 4 **Elizabeth Crawford**, *Ionsense, Inc.*  
The Use of Direct Analysis in Real Time (DART)-MS for the Detection of Pesticides in Various Fruits;
- 5 **Eric Dorris**, *George Washington University*  
Data-Dependent Acquisition for Laser Ablation Electrospray Ionization Mass Spectrometry
- 6 **Kevin Douglass**, *Western Michigan University*  
The Supercharging of Cytochrome C Upon the Addition of Sulfolane: A Mechanistic Study
- 7 **Mariam ElNaggar**, *Oak Ridge National Laboratory*  
Flow Dynamic Studies to Improve and Expand the Capabilities of Liquid Extraction Based Surface Sampling Probes
- 8 **Paul Farnsworth**, *Brigham Young University*  
Imaging Helium Metastable Atoms in a Dielectric Barrier Discharge Used as an Ambient Ionization Source for Mass Spectrometry
- 9 **Yuqian Gao**, *University of Delaware*  
Online Characterization of Organic Aerosols by Ambient Secondary Electrospray Ionization
- 10 **Glenn Harris**, *Georgia Institute of Technology*  
Coupling of Ambient Electrospray-Assisted Laser Desorption Ionization (ELDI) to Atmospheric Pressure Drift Tube Ion Mobility Spectrometry (DTIMS) for the Screening of Genuine and Counterfeit Solid Pharmaceuticals
- 11 **Joe Loo**, *UCLA*  
Using a Mid-Infrared Tunable Laser System for Atmospheric Pressure Ionization Techniques
- 12 **Zhixin Miao**, *Ohio University* Characteristics and Applications of Liquid Sample Desorption Electrospray Ionization Mass Spectrometry (DESI-MS)
- 13 **Alex Mordehai**, *Agilent Technologies*  
Enhanced Sensitivity of MRM-based Protein Quantitation for Biomarker Verification with Thermal Gradient Focusing Electrospray Ionization Source
- 14 **Thabiso Musapelo**, *Louisiana State University*  
Measuring Particle Formation in Laser Desorption Ambient Ionization

## POSTER PRESENTATIONS, *continued*

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Poster #

- 15 **John O'Brien**, *University of Texas at Austin*  
Selective Capture and Analysis of Thiol Biomarkers Using Surface Enhanced  
Transmission Mode Desorption Electrospray Ionization Mass Spectrometry
- 16 **Olga Ovchinnikova**, *Oak Ridge National Laboratory* Combining Laser Ablation Surface  
Sampling and Electrospray Ionization: New Methods and Enhanced Analytical  
Applications
- 17 **Drew Sauter**, *nanoLiter LLC*  
Induction Based Fluidics (IBF), Fundamentals & Applications of an Inductive  
Atmospheric Sample Energizing Technique and Two Questions
- 18 **Jared Shaw**, *University of Texas at Austin*  
Transmission Mode Desorption Electrospray Ionization Coupled with 193 nm UVPD for  
High-Throughput Protein Identification
- 19 **Michael Stump**, *IXc Technologies*  
Moving the Power of Atmospheric Pressure Ionization Outside the Traditional  
Laboratory: Opportunities and Challenges
- 20 **Weijian Sun**, *Shimadzu Research Laboratory* Comparison of Vacuum-UV  
Photoionization of Gas Phase Molecules in Different Pressure Regions
- 21 **Francis Talbot**, *University of Toronto* Desorption by Impulsive Vibrational Excitation:  
Prospect for Mass Spectrometry
- 22 **Jerry Tso**, *University at Buffalo* Investigating Wrong-Way-Round Ionization LC-  
MS/MS at High and Low pH for the Simultaneous Analysis of Antibiotics and Hormones
- 23 **Nelson Vinueza**, *Purdue University* Analysis of Sugars by Chloride Attachment  
Negative-ion APCI /Tandem Mass Spectrometry
- 24 **He Wang**, *Purdue University*  
Fragmentation of Peptide Ions during Nanoelectrospray Ionization
- 25 **Rui Wang**, *ETH Zürich*  
The Role of Nebulizer Gas Pressure in Electrosonic Spray Ionization (ESSI)
- 26 **Qian Yang**, *Purdue University*  
Development and Application of Paper Spray Ionization
- 27 **Frank Zydel**, *United States Army Medical Research Institute of Chemical Defense*  
Rapid Screening of Organophosphate (OP) Metabolites in Urine by Atmospheric Solids  
Analysis Probe – Mass Spectroscopy (ASAP-MS)