



# Society for Analytical Chemists OF PITTSBURGH



## SEPTEMBER MEETING

***Monday, September 13, 2010***  
**8:00 p.m.**

Duquesne University  
Pappert Hall in the Bayer Learning Center

Dinner: City View Café (6<sup>th</sup> Floor)



**JOSHUA J. COON, PH.D.**

2010 PITTSBURGH CONFERENCE ACHIEVEMENT AWARD RECIPIENT

ASSISTANT PROFESSOR OF CHEMISTRY  
UNIVERSITY OF WISCONSIN – MADISON

**"New Technology for Large-Scale Protein Quantification"**

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5:30 PM	Social Hour	Student Union – City View Café (6 <sup>th</sup> Floor)
6:30 PM	Dinner	Student Union – City View Café (6 <sup>th</sup> Floor)
7:30 PM	Student Affiliate Meeting	Mellon Hall – Room 410
7:40 PM	Business Meeting	Pappert Hall in the Bayer Learning Center
8:00 PM	Technical Meeting	Pappert Hall in the Bayer Learning Center

## ABSTRACT:

We describe the development and use of new mass spectrometry technology – an electron transfer dissociation (ETD)-enabled Orbitrap – to map and quantify proteins on a global scale. The instrument allows for the implementation of multiple peptide dissociation methods, *i.e.*, ion trap collision-activated dissociation (CAD), beam-type CAD (HCD), infrared-multiphoton dissociation (IRMPD), ETD, and combinations thereof, for the automated selection of each in a real-time based on precursor peptide attributes (*i.e.*, data-dependent decision tree). Protein quantification is readily accomplished through use of isotopic labels – either SILAC or iTRAQ. The instrument will likewise propel top-down proteomics as acquisition of ETD-MS/MS spectra in the high resolving power Orbitrap allows for direct analysis of intact proteins on a sub-second timescale with ~ 300 ppb mass accuracies. Such mass accuracies are used to directly annotate ETD tandem mass spectral peaks with ion type and chemical composition. We demonstrate these and many other aspects of the instrument on a variety of applications involving human ES cells, differentiating human ES cells, and induced-pluripotent cells.

## BIOGRAPHY:

Joshua J. Coon, Assistant Professor of Chemistry at the University of Wisconsin-Madison, received the 2010 Pittsburgh Conference Achievement Award. In 1998 Coon completed his B.S. in Chemistry at Central Michigan University in Mt. Pleasant, MI. Coon received his Ph.D. in chemistry from the University of Florida with Willard Harrison in 2002. At Florida, he developed an ambient ionization technique for peptide analyses that combined laser desorption and atmospheric pressure chemical ionization. Coon then conducted a NIH National Research Service Award Postdoctoral Fellowship in the laboratory of Professor Donald Hunt at the University of Virginia where he and John Syka carried out pioneering work on the development of electron transfer dissociation (ETD). This activation technique is now commonly used for the identification of labile post-translational modifications and for large-scale protein sequencing. In the fall of 2005 he began his current appointment as an Assistant Professor of Chemistry and Biomolecular Chemistry at the University of Wisconsin-Madison. With emphasis on ion chemistry and instrumentation, his group develops and applies new enabling mass spectrometry-based (MS) proteomic technologies. These cutting-edge tools allow them to examine the molecular events leading to cell differentiation of human embryonic stem cells and the combinatorial combination of histone post-translational modifications in pluripotent stem cells. His research interest also focuses on the development of ETD for intact protein sequencing and on the use and application of algorithms enabling protein/peptide identification from product ion spectra. He holds several patents on MS technologies and has published over 40 peer-reviewed scientific papers. He has been previously recognized with a number of prestigious awards, including the Beckman Young Investigator, the American Society for Mass Spectrometry Research Award, the NSF CAREER Award, the Eli Lilly and Company Young Investigator, and the Ken Standing Award.

## DINNER RESERVATIONS:

Please complete the [Monthly Dinner Reservations Form](#) under Meeting Notices on our website [www.sacp.org](http://www.sacp.org) by Wednesday, September 8, 2010. Should you not be able to access the form, please contact Valarie Daugherty, SACP Administrative Assistant at 412-825-3220 ext 204 to make your dinner reservation. If you have any dietary restriction, please make a note when you make your reservation. The entrée for September is Grilled Salmon Fillet with Sweet Red Pepper Relish. Dinner will cost \$8 (\$4 for students) and checks can be made out to the SACP.

**\*\*No standing dinner reservations for 2010-2011. A reservation will need to be made for each meeting.\*\***

## PARKING:

Duquesne University Parking Garage entrance is on Forbes Avenue. Upon entering the garage, you will need to get a parking ticket and drive to upper floors. Bring your parking ticket to the dinner or meeting for a validation sticker. Should any difficulties arise, please contact Duquesne University.