



GREATER BOSTON MASS SPECTROMETRY DISCUSSION GROUP

DATE:

THURSDAY, SEPT 19 2013
5:30 pm - 8:15 pm

LOCATION:

BIOGEN - IDEC
14 Cambridge Center
Cambridge, MA 01039

SPEAKER:

MATTHEW BUSH, Ph.D.

Assistant Professor, University of Washington

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TITLE:

NATIVE MASS SPECTROMETRY: IONIZATION, ION MOBILITY, AND THE MAMMALIAN CIRCADIAN CLOCK

ABSTRACT:

Native mass spectrometry is an emerging approach for characterizing the stoichiometry, assembly, and shapes of protein complexes in solution. Native MS is especially useful for investigating proteins and protein complexes that are challenging to characterize using condensed-phase experiments, including those that are heterogeneous, have large mass, and are membrane bound. I will discuss novel ion mobility spectrometry devices that we have used to gain new insights into the formation of native-like ions, the structures and increased information content of charge-manipulated ions, and the solution-phase structures and dynamics of an ubiquitin ligase complex involved in regulating the circadian clock of mammals.

BIO:

Matthew Bush pursued his Ph.D. from 2003-2008 with Evan Williams and Richard Saykally at the University of California, Berkeley. During that time he used infrared laser spectroscopy and Fourier-transform ion cyclotron resonance mass spectrometry to investigate zwitterion formation in gas-phase biomolecules and the structural effects of hydration on biomolecular and multiply charged ions. This training in high-performance mass spectrometry and physical chemistry laid the ground work for his continued pursuits using gas-phase techniques to investigate the structures and interactions of biomolecules. In 2008 he joined the laboratory of Carol Robinson FRS DBE at the University of Cambridge and then the University of Oxford, during which time he was a Waters Research Fellow, a Junior Research Fellow of Jesus College, University of Oxford, and developed experimental and analytical frameworks for using ion mobility mass spectrometry experiments to accurately characterize the structures of drug-like molecules, peptides, and protein complexes. He joined the chemistry faculty at the University of Washington in 2011, where he is also a member of the Biological Physics, Structure and Design Program and the Molecular Engineering & Sciences Institute. His research group is focused on developing mass spectrometry based approaches for elucidating the structures, assembly, and dynamics of protein complexes. His group applies these approaches to a wide range of biological systems, including those involved in bacterial secretion, regulating protein degradation, and protein homeostasis.

Register online today at <http://www.gbmsdg.org/>
For additional questions please contact stephen_andrichak@waters.com

