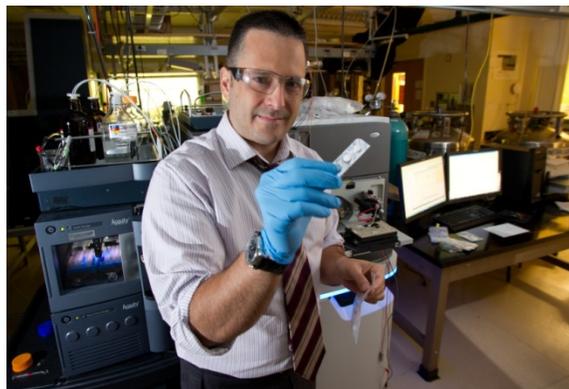


# Chemistry Seminar

## Metabolomics Preeminence Faculty Candidate

**Professor  
Facundo M. Fernández**

**School of Chemistry and  
Biochemistry  
Georgia Institute of Technology**



**Thursday, May 29, 2014, 3:30pm (coffee at 3:15)  
Leigh Hall 207**

### **“Cancer Metabolomics: from Spectral Features to Multivariate Diagnostic Assays”**

The “metabolome”, the “mirror on the wall” for complex proteomes and transcriptomes shows promise for generating new hypothesis regarding the early stages of disease development, and for revealing biomarkers providing multivariate diagnostic indexes. Mass spectrometry-based metabolomic technologies have a demonstrated potential for early disease detection in clinical settings (e.g. newborn screening), provided the specific assays employed have the sample throughput, robustness and reproducibility necessary to handle numerous clinical samples reproducibly.

In this talk, I will discuss recent results from our team of collaborators involving the use of mass spectrometry-based analytics coupled to support vector machine learning with the aim of identifying biomarker panels that can detect ovarian and prostate cancers at early stages in human patients and mouse models. I will also showcase new ionization, imaging, and gas-phase separation technologies being developed which are finding applicability in this rapidly changing field. We believe these technologies could increase metabolic pathway coverage and improve quantitative experiments, ultimately leading to more significant discoveries.

Professor Fernández was born in Buenos Aires, Argentina. He received his MSc in Chemistry and his PhD in Analytical Chemistry from Buenos Aires University in 1995 and 1999. His postdoc with Dick Zare at Stanford University focused on Hadamard transform time-of-flight mass spectrometry coupled to capillary separation methods; he then worked with Vicki Wysocki at the University of Arizona developing novel tandem mass spectrometers for proteomics. In 2004 he joined the faculty at Georgia Institute of Technology, where he is currently a Full Professor. He is the author of over 100 peer-reviewed publications. He has received the NSF CAREER award, the CETL/BP Teaching award and the Ron A. Hites best paper award from ASMS. His current research interests include instrumentation and methods in ion mobility and mass spectrometry for metabolomics, forensics, and imaging.