

C. EUGENE BENNETT
DEPARTMENT OF CHEMISTRY

Discoveries of Powerful New Ionization Processes for Use with Mass Spectrometry

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This presentation covers discovery, applications, and mechanistic aspects of novel ionization processes for use in mass spectrometry (MS) that guided us in a series of discoveries, instrument developments and commercialization. In my view, the apex was the discovery of vacuum matrix-assisted ionization (vMAI) on an intermediate pressure matrix-assisted laser desorption/ionization (MALDI) source without the use of a laser, high voltages, or any other added energy. Only exposure of the matrix:analyte to the sub-atmospheric pressure of the mass spectrometer is necessary to initiate ionization of nonvolatile compounds such as proteins. We, and others have demonstrated exceptional analytical utility without a complete understanding of the underlying mechanism. Our current research is focused on how best to understand, improve, and use these novel ionization processes which convert volatile and nonvolatile compounds from solids or liquids into gas-phase ions for analysis by MS using e.g. mass selected fragmentation and ion mobility spectrometry to provide reproducible, accurate, and improved mass and drift time resolution. A brief perspective on how these unprecedented relate to traditional ionization processes and methods will also be presented.

Date: Wed, Oct. 16, 2019

Time: 4:30-5:30 pm

Location: 208 Clark Hall

Students, meet the speaker over coffee and cookies in the Bennett Conference room at 3:30 pm