

# Analytical Seminar

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## **“DEVELOPMENT AND APPLICATIONS OF PHOTODISSOCIATION FOR BIOANALYTICAL MASS SPECTROMETRY”**



As our understanding of genomics, proteomics, and glycomics continues to evolve, the ability to address increasingly difficult biological questions depends on the identification of biological molecules in complex mixtures with high sensitivity and minimal sample consumption. In this context, the tremendous growth in the application of tandem mass spectrometry for detection, quantification and characterization of biological molecules has spurred the exploration of new ion activation/dissociation methods for structural characterization of biological molecules. Although collisionally activated dissociation remains the gold standard, it has several shortcomings (e.g. insufficient energy deposition, limited applicability for pinpointing post-translational modifications in peptides, etc.) that have stimulated the search for other activation methods, such as electron-based dissociation and photodissociation. Photoactivation entails using a laser to irradiate gas-phase ions with photons, thus increasing their internal energy and promoting diagnostic cleavages that allow identification of biological molecules whose sequences and structures are unknown. The ability to vary energy deposition based on variation of irradiation time or photon flux makes PD a "tunable" activation method. This presentation will describe the use of both infrared and UV lasers for mass spectrometric characterization of biological molecules, along with novel chemical derivatization methods to add chemical selectivity or enhance absorptivities of molecules.

**Thursday, April 23, '09  
12:15 p.m. in Room 1315**