High Performance Mass Spectrometry for Protein Research and Metabolomics

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Abstract: Applications of electrospray ionization (ESI) quadrupole time-of-flight mass spectrometry include proteomics, metabolomics, drug metabolite ID and protein noncovalent interactions. Proteomics studies using this platform can elucidate drug-induced alterations, affected metabolic pathways, and mechanisms for drug resistance, and can identify novel enzymes. Examples will be shown of using mass spectrometry for neuronal studies with rat as the model system. Benefits of high spectral resolution with exact mass measurement will be demonstrated for positive confirmation of analyte identity in complex matrices. Sensitivity is a key requirement for examining biologically relevant concentrations. MS coupled with Ion Mobility provides an additional dimension of separation within the mass spectrometer, which enhances the signal to noise ratio, thus facilitating the detection and identification of lower abundance species. Examples utilizing Ion Mobility for drug metabolite studies will be presented. The seminar will be followed by a discussion session with the speaker at 12:00 noon in 131 Biotech.