

INFRARED RESONANCE ENHANCED PHOTODISSOCIATION SPECTROSCOPY OF METAL ION-BENZENE COMPLEXES

T.D. JAEGER and M. A. DUNCAN, *University of Georgia, Department of Chemistry, Athens, GA, 30602-2556*; D. van HEIJNSBERGEN, G. von HELDEN, and G. MEIJER, *F.O.M. Laboratory for Plasmaphysics, Rijnhuizen, Edinsonbaan 14, NL-3439 MN Nieuwegein, The Netherlands*.

First row transition metal ion-benzene complexes of the form $M^+(\text{benzene})_{1-3}$ are produced by laser vaporization in a pulsed nozzle source, mass-selected in an ion-trap mass spectrometer and excited in the infrared with a free electron laser. Multiphoton dissociation occurs by the elimination of whole benzene molecules. The photofragment yield versus wavelength produces IR resonance-enhanced multiphoton photodissociation (IR-REMPD) spectra for these complexes. Vibrational bands observed in the $600\text{-}1800\text{ cm}^{-1}$ region correspond to modes in the benzene molecules, but are shifted from those of free benzene due to the interaction with the metal ion.