DEVELOPMENT OF AN ION-TRAP INSTRUMENT FOR ASTROCHEMICALLY RELEVANT REACTION KINETICS

DARYA KISURYNA, JULIANNA PALOTÁS, JESSICA PALKO, LEAH G DODSON, *Department of Chemistry and Biochemistry, University of Maryland, College Park, MD, USA*.

Metal-bearing cyanide species (MgCN, MgNC, MgC_3N, etc) have been detected in the outer circumstellar envelope of IRC+10216. However, data on the formation of these species, as well as the kinetic rates of such reactions is lacking. In our laboratory, we are developing a versatile custom-built ion instrument, which unites a glow-discharge ion source and ion trapping. This combination leverages the advantages of both techniques in reaction kinetics study. In this work, we describe not only our unique ion instrument, but also share preliminary results, details of the upcoming experiments, and future directions of implementing cavity ringdown spectroscopy to the system and making the ion trap cryogenic for astrochemically relevant research.