CHARACTERIZATION OF THE $N_{6,7}$-EDGE AND $O_{2,3}$-EDGE OF Pt AND Ir COMPLEXES BY EXTREME ULTRAVIOLET SPECTROSCOPY

CLARE LEAHY, JOSH VURA-WEIS, *Department of Chemistry, University of Illinois at Urbana-Champaign, Urbana, IL, USA*.

Third-row transition metal complexes, particularly those containing platinum and iridium, are ubiquitous photosensitizers and catalysts, and transient x-ray absorption near edge structure (XANES) spectroscopy at the metals' L-edges has been increasingly used to study their photodynamics. While synchrotron XANES provides high photon flux and ultrafast time resolution, beamtime is unfortunately limited. We have examined 5d metal complexes using a tabletop XANES spectrometer which generates femtosecond XUV pulses (30-100 eV, 30 fs IRF) via high-harmonic generation (HHG), where the $N_{6,7}$-edge (4f-5d) and $O_{2,3}$-edge (5p-5d) of these metals appear. We show the ground state N-edge and O-edge XUV spectra of several platinum and iridium complexes. We will use transient XUV spectroscopy to demonstrate that these edges can be used to track oxidation state changes at the metal center after excitation of a MLCT transition in $Ir(ppy)_3$. Overall, this will provide information on the metal electronic structure and allow for parsing out the impact of metal vs ligands in the excited states when combined with other transient spectroscopies.