

SPECIATION OF NITROGENOUS-COMPOUNDS WITH P-TOLUENESULFONYL CHLORIDE DERIVATIZATION FOLLOWED BY LC-MS. **Ran Zhao**, Xinyang Guo, Kimberly Wong, Department of Chemistry, University of Alberta, Canada. (rz@ualberta.ca)

Nitrogenous compounds, including ammonia, amines, and amides, play an important role in a wide variety of environmental and biological processes. Detection of small nitrogenous compounds in environmental samples is challenging. These compounds can have high polarity, low ionization efficiencies with common mass spectrometry (MS) ion sources and are usually found in complex environmental matrices. Derivatization with p-toluenesulfonyl chloride (TsCl) is known to be selective to amino-nitrogenous compounds and has been previously used in the detection of amines in beverages. In this presentation, I will showcase two applications of this derivatization method to environmental samples. Combined with liquid chromatography (LC)-MS, our method achieved excellent selectivity and sensitivity towards amines and amides that are of great environmental importance. In the first application, my team detected and quantified key species, such as uric acid and dimethylamine, in a commercial poultry facility. These compounds are precursors to ammonia, a toxic gas often cumulated in indoor poultry facilities. In the second application, we characterized oxidation products of nicotine in e-cigarette juices (e-juices). This study shows that e-juices can be slowly oxidized during storage, with their nicotine contents forming unrecognized and potentially harmful nitrogenous products.