DEVELOPING MULTIPLEXED ELECTROCHEMICAL DETECTION METHODS FOR MONITORING MANGANESE (Mn) IN DRINKING WATER. **Kayla Elliott**, Zhe She, and Sarah Jane Payne, Queen's University, Department of Chemistry and Department of Civil Engineering, Kingston, ON, Canada. (19kle2@queensu.ca)

Manganese (Mn) is a contaminant of emerging concern present in drinking water that can have negative neurological effects on children. Although there are effective drinking water treatment processes to remove Mn, trace levels leaving the treatment plant can accumulate on distribution system pipe materials, forming a reservoir. Through shifts in chemical, hydraulic and microbiological stability, Mn reservoirs can be released back into bulk drinking water and arrive at consumers taps at levels exceeding the health-based maximum allowable concentration. Current traditional spectroscopic techniques for the detection of Mn are highly sensitive; however, they cannot be readily applied for real-time monitoring in distribution systems due to their size, cost, and operational requirements. Recently, electrochemical methods have been explored as portable, low-cost options; however, they face detection difficulties due to the complexity of a drinking water matrix. Thus, there is critical need for the development of a real-time monitoring tool for Mn in drinking water. In this research, a multichannel detection method using chronoamperometry is explored for its ability to detect Mn^{2+} in the presence of common drinking water interferents using pattern recognition. These generated patterns are analyte and concentration dependent and could be used to identify Mn^{2+} in real drinking water samples.