

FACULTY DEVELOPMENT ENDOWMENT FUNDS

Nathan Deutsch Development Fund

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Proposal Title: Heavy metals detection using graphene and glass carbon based Ionophore-Doped Polymeric Membrane Electrode

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Brief Abstract for Publication on RTT Website:

Graphene is an ideal electrode material in the area of electroanalytical chemistry, and rarely modified graphene electrodes have been evaluated for sensing applications. Conductive polymers (CPs) are widely used in chemical sensors. CPs serve as ion-to-electron transducers between an electrode and polymer membrane. This study aims to develop ultrasensitive new graphene based double polymer membrane sensors using conductive polymers to monitor water contaminants. These sensors are based on ion-transfer stripping voltammetry (ITSV) technique, which is highly sensitive because analyte ions are preconcentrated in the sensing membrane. The membrane will be based on plasticized poly (vinyl chloride) (PVC) under the rotating electrode configuration and analytes will be directly determined. Essentially, the ITSV-based is based on the determination of an analyte concentration from the limiting current at the rotating double-membrane electrode. Ultimately, we will apply these ion sensors as an inexpensive and fast analytical method to complement current methods for environmental analysis such as ICP-MS.