CHEMISTRY DEPARTMENT SEMINAR

Acoustofluidics for Separation and Purification of Heavy Metal Adsorbed MPs in the Aquatic Environment

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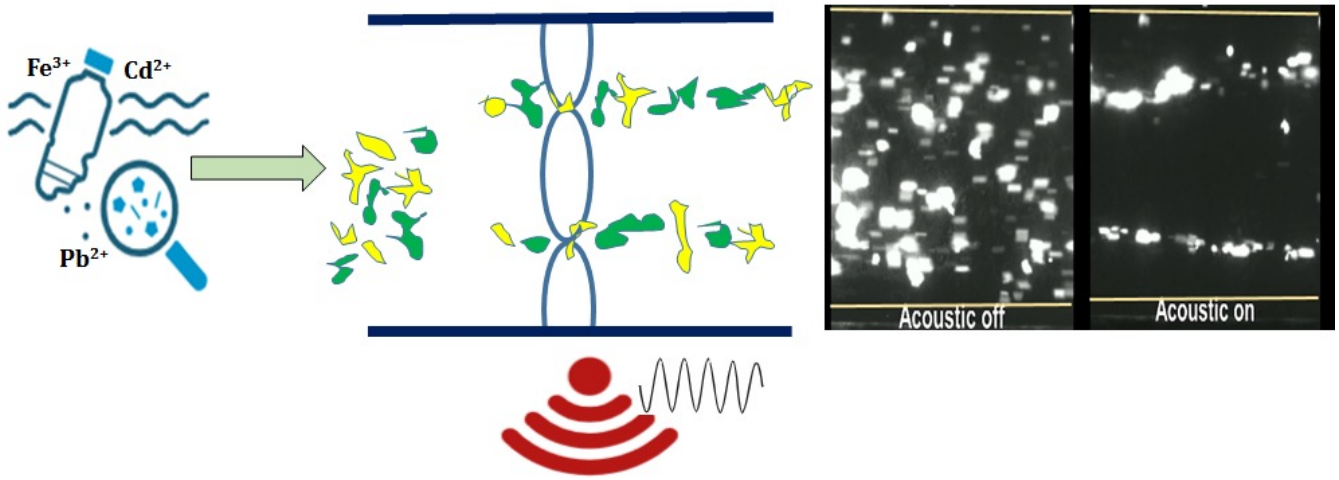
The aquatic environmental pollution by microplastics (MPs) has been an emerging threat to whole biosphere. MPs undergo physiochemical process degradation in the environment which alter the surface characteristics such as porosity and charge properties of the MPs ultimately converting them as vectors of various chemical and biological pollutants such as heavy metals, PFAS, pharmaceuticals, pesticides etc. by adsorbing them through numerous mechanisms from the surrounding cocktail. Hence, these contaminated MPs can be considered as silent killers which cause complex health issues in humans as well as adverse impacts on the entire planet. Therefore, detection and separation of contaminated MPs with heavy metals and other pollutants is a crucial requirement. This study investigates the acoustic behavior of selected heavy metals adsorbed synthetic microplastics (MPs) and MPs derived from common plastic sources, using acoustofluidic devices fabricated from microfabrication techniques and steel tubes. The adsorption of heavy metals onto MPs was confirmed through ICP-OES analysis. These findings provide valuable insights for developing acoustic-based technologies aimed at isolating heavy metal-contaminated MPs from various water bodies, contributing to more efficient water purification strategies.



Jan 29th Wednesday – 2:00 P.M. – Lopez 106