Comprehending the Interaction between Heavy Metals and Tailored Adsorbent Materials for Environmental Remediation

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The sequestration of heavy metals requires the development of effective and green adsorbent materials. In this regard, customized biopolymers and suitably tailored graphene based materials would serve as a viable option. Biodegradable polymers such as chitosan and cellulose possess distinct benefits due to the presence of amino and hydroxyl functional groups for effective interaction with toxic heavy metals. Graphene oxide is a fascinating material and when suitably modified with ionic liquids it would interact with heavy metal ions through cation-π, hydrogen bonding and electrostatic interactions. These materials offer high adsorption capacity, fast adsorption kinetics and thermodynamically feasible interactions with heavy metals. The interaction of biopolymers with long chain amine extractants also results in an exceptional performance for the removal of various heavy metals such as chromium, mercury, etc. The talk would emphasize on the interaction and application of suitably tailored biopolymer composites and graphene oxide with heavy metals and the subsequent application for remediation.

Biography:
Prof. N. Rajesh obtained his Ph.D. from Indian Institute of Technology (IIT) Madras, India. He is currently a Professor in the Department of Chemistry, Birla Institute of Technology and Science (BITS) Pilani, Hyderabad campus, India. He has 20 years of teaching and research experience and is a fellow member of the Royal Society of Chemistry, London and also a member of several other prestigious societies such as the Chemical Research Society of India, Indian Science Congress and the American Chemical Society. His research interests include development of novel materials for the effective detoxification of heavy metals from industrial effluents. He has several publications to his credit and also serves as an expert peer reviewer for various international journals. Currently, his group is engaged in the development of novel biopolymer composites, graphene oxide and synthetic polymeric resins for heavy metal remediation.