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Design of chitosan composite materials for treatment of waterborne contaminants

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Modified graphene oxide (GO) biomaterial composites were prepared by various facile cross-linking. This has led to the development of adsorbent materials with unique physicochemical properties for the controlled removal of model waterborne contaminants such as cationic dyes. This presentation will focus on several case studies of modified biomaterials developed by Wilson's research group that demonstrate unique adsorption properties at equilibrium and at dynamic conditions. The results reveal that GO modified biomaterials possess high uptake and improvement in adsorption properties with responsiveness toward

external conditions (temperature, pH, magnetic fields, etc.). Reported studies reveal the unique properties of modified biomaterials for advanced water treatment applications at variable scale to address chemical aspects of global water security. Several examples will show how an understanding of the functional properties of biomaterials relate to the “*catch and release*” of organic and inorganic waterborne contaminants for applications ranging from chemical fractionation to environmental remediation of targeted species (petrochemicals, fertilizers, detergents, etc.) in aquatic environments.

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