Hybrid Polymer Nanocomposites: Enhanced Properties & Applications

Rania E. Morsi
Egyptian Petroleum Research Institute (EPRI), Cairo, Egypt
raniaelsayed@yahoo.com

Superabsorbent enhanced-catalytic core/shell nanocomposites hydrogels for efficient water decolorization by in-situ inverse emulsion polymerizations of acrylamide (PAM) in presence of metal oxides nanoparticles (TiO2 and ZnO, either individually or in a mixture). The composites were cross-linked to prevent structural deformation in water. A synergetic effect between the adsorption properties of the polymer and the photocatalytic activity of the metal oxides is proposed for photo-decolorization of Black T and Indigo dyes. In another work, ZnO/PAM core/shell nanocomposites were found to demonstrate anti-corrosion, antibacterial and anti-biofilms activities. Among other studied polymeric materials: polyaniline for corrosion inhibition, derivatives of styrene-maleic anhydride copolymers for heavy metals uptake, copolymers of acrylamide and vinyl acetate to scavenge H2S, conducting polymers and others. The talk represents a survey on hybrid nanocomposites designed and prepared for environmental and industrial applications. Multifunctional nanocomposites (MFC) were designed for multi-contaminant water treatment; heavy metals uptake and antimicrobial activity against microbes isolated from local wastewater sample were compared with bi-functional nanocomposites of its individual components. The nanofibers of these nanocomposites show more enhanced results.

Thursday 30 March 2017, 14:30
ISOF 12 – Meeting Room (1st floor)
CNR Research Area
Via Gobetti 101, Bologna

Follow us on facebook: http://www.facebook.com/coffeetalkisof