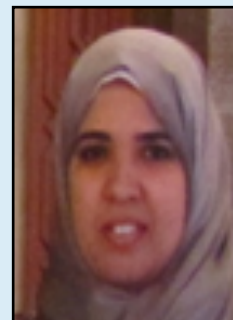


CoffeeTalk@ISOF

EXTENDED EDITION

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.

Her current positions is associate Professor of physical chemistry and member of the board of nanotechnology center, Egyptian Petroleum Research Institute (EPRI), Cairo, Egypt. She has got her Master and PhD. degrees in physical Chemistry (in synthetic and natural polymers) from Cairo University, Egypt. She is currently working on Nanofiber fabrication using electrospinning technique, preparation of polymer based nano-materials for environmental and energy applications, emulsion systems: their stabilization and applications and biomedical applications of natural polymers.

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>