



ACS Local Section
New York
Long Island Subsection

Synthesis of Natural-based Nanocomposites and Their Applications

Dr. Zari Fallah

Department of Chemistry
University of Mazandaran

Thursday, September 5, 2024

6:45 PM

Queensborough Community College
Science Building, Room 112

(Registration required prior to event)

[Click here to register](#)



Abstract: In this presentation, preparation and various applications of newly synthesized natural-based nanocomposites will be discussed. Nanocomposites containing cellulose and cyclodextrin substrates were synthesized using titanium dioxide nanoparticles as fillers. These composites have been applied in several fields such as water treatment. The adsorption behavior of cellulose and cyclodextrin nanocomposites (Cell.Com and CD.Com) for removal of heavy metal ions (Pb^{2+} , Cd^{2+} , Zn^{2+} , and Hg^{2+}) and fluoride anion from aqueous solutions was performed through the batch technique. These highly porous nanocomposites with high surface area and active sites exhibited high adsorption capacity, good selectivity, recyclability, and environmental friendliness. The results of our investigation into the antibacterial properties of Cell.Com and CD.Com illustrated that the synthetic composites have a wide range of activities against gram-positive (*S. aureus* and *B. subtilis*) and gram-negative (*E. coli* and *P. aeruginosa*) bacteria.

Biography: Dr. Zari Fallah focuses on Organic-Polymer Chemistry. Her master's thesis focused on the synthesis of novel ionic liquids and their applications in the preparation of benzimidazole, formamidine, and xanthone derivatives. When doing her Ph.D. work, Dr. Fallah synthesized novel bio-nanocomposites *via* click reaction for wastewater treatment by removing organic and inorganic contaminants from aqueous solutions through the batch technique. Part of her research also concentrates on designing and developing synthetic strategies for preparing a wide range of organic compounds, inorganic nanoparticles, and bio-nanocomposites. In collaboration with the Babol University of Medical Sciences in Iran, Dr. Fallah worked on research projects involving the investigation of antibacterial, anticancer, and antidiabetic activities of triazole-based hybrids. Dr. Fallah has published 21 research and review articles in reputable journals, including two book chapters. She has been an advisor for several postgraduate students and is now working for the LNK pharmaceutical company.

Presented by the Long Island Subsection of the American Chemical Society