

“Refractory Plasmonic Nanomaterials with Different Applications”

Sanchari Chowdhury, PhD
Department of Chemical Engineering
New Mexico Tech



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Abstract: The interests of our research group evolve around the development of optically active nanostructures such as plasmonic nanoparticles for different applications, ranging from the detection of biomolecules to solar energy conversion. Plasmonic nanoparticles can strongly enhance local electromagnetic fields; and their ability to concentrate light in the nanoscale have found a broad range of applications. Presently, our research group focuses on two specific areas: (1) Development of efficient photothermal materials which can convert light into heat for different applications such as solar enhanced water evaporation and photothermal biomedical devices. (1) Development of plasmonic materials to efficiently concentrate light in the nanoscale to drive energy-expensive reactions. We are studying refractory plasmonic nanomaterials and bimetallic nanoparticles for efficient conversion of light into other forms of energies such as thermal, chemical, and electrical energy. In this talk, I will particularly focus on our efforts to develop refractory plasmonic nanoparticles for different applications ranging from plasmon enhanced catalysis to recycling polymer.

Bio: I am currently a faculty member in the Chemical Engineering Department of New Mexico Tech. As a faculty most of my efforts go towards teaching and research. The interests of our research group evolve around the development of optically active nanostructures such as plasmonic nanoparticles for different applications, ranging from the detection of biomolecules to solar energy conversion. Additionally, I aspire to instill scientific curiosity in little minds and increase their exposure to science careers through the outreach activities geared towards K–12 student population. I enjoy participating in different K-12 outreach activities ranging from afterschool programs to participating in the science exhibition. My background has been pivotal to my growth as an educator and researcher. Before I came to the United States to pursue my PhD in Chemical Engineering from University of South Florida, Tampa, I earned my BS and MS both in Chemical Engineering, from NIT and IIT in India, respectively. Growing up in India, the importance of STEM education was always clear to me. My love for Physics and Math automatically set me up for a career in engineering. However, I didn't know how much I would love to call myself a chemical engineer until I attended my first Chemical Engineering course. I especially like the fact chemical engineers can put their mark in a diverse range of fields whether it's the food processing industry, fine chemical industry, environment and sustainability or developing a diagnostic device for early detection of diseases. I loved the research training I received from my PhD at USF and Postdoctoral research work at Carnegie Mellon University. There I got a chance to develop my expertise on optically active nanoparticles and their applications in diagnostic devices as well as renewable energy. Ultimately my love for teaching and my desire.



Department of Chemistry
Graduate Seminar
Host: Praveen Patidar