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Suranjana V. Mayani

Marwadi University, India

Advancement of Environmentally Friendly Nano Catalysts for Efficient Dye Degradation in Water

Abstract: Graphene oxide (GO) is a valuable and versatile material for applications in electronics, optics, chemistry, energy storage, and biology. In our research, we have synthesized a Strontium Ferrite Graphene Composite (SF-GOC) and performed comprehensive physico-chemical characterization using techniques such as XRD, FTIR, SEM-EDX, TEM, AFM, TGA, and Nitrogen Adsorption Desorption Analysis. Only a limited number of catalysts have been developed so far that can effectively degrade Eosin-Y and Orange (II) dyes in water through heterogeneous catalysis. This study provides an in-depth analysis of the recyclable SF-GOC nanocomposite, which demonstrates efficient degradation of the harmful dyes Eosin-Y (96.2%) and Orange (II) (98.7%) under mild reaction conditions. Additionally, this composite material shows potential for new multifunctional applications in areas such as composite materials, solar energy, heterogeneous catalysis, and biological processes.

Keywords: Graphene oxide, Strontium Ferrite Graphene Composite, Dye degradation

Biography: Dr. Suranjana V. Mayani has been working as an Associate Professor, Chemistry, Marwadi University, Rajkot, Gujarat since 2018. Her research focuses on development of metal-silica based materials, carbon transition metal based functional materials, metal composite nano-reactors for adsorption and heterogeneous catalysis process, water purification. She completed her Ph.D. in Chemistry (2009), Gauhati University, Assam, India. She worked as a Post Doctoral Fellow and Visiting Foreign Professor at Hoseo University, South Korea (2009-2011) Later, she worked as an Assistant Professor/Research Professor at Dongguk University, South Korea (2011-2018). She published more than more than forty papers to referred national and international journals and eight books/book chapters. She has presented her work as research expertise and academician in several International/National conferences and Webinars. She has been associated with Students Start-ups Innovation projects from Government of Gujarat. She is active member of Catalysis society of India, Korean Chemical Society and American Chemical Society.