**Synthesis of Sustainable Strontium Ferrite Graphene Nano Composite for Fluoride removal in water**

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**Abstract:** The extended exposure to fluoride above the permissible limit results in both dental and skeletal fluorosis, it is now necessary to remove fluoride from polluted water sources using easily controllable and environmentally acceptable adsorbents. Strontium Ferrite Graphene Composite (SF-GOC) has been created in the current work and is thoroughly characterized by physico-chemical methods like XRD, FTIR, SEM-EDX, TEM, AFM, TGA, and Nitrogen adsorption desorption analysis. The application of fluoride from water required the optimization of a number of factors, including adsorbent dosage, contact time, initial fluoride concentration, pH, and temperature. The leaching experiment demonstrated that the use of the transition elements strontium and iron did not result in any secondary contamination. The maximal adsorption capacity was determined from the Langmuir isotherm (R2= 0.9848) and was found to be 5.6 mg/g. The maximum amount of fluoride that could be removed under ideal circumstances using a UV-Visible spectrophotometer was found to be 97.5 %, showing that SF-GOC can be used as an efficient, thermally stable, recyclable, and environmentally acceptable nano catalyst for the straightforward removal process of fluoride from contaminated water.

**Keywords:** Strontium Ferrite Graphene Composite; fluoride removal; adsorption; recyclable; nano catalyst

**Biography of Presenter about 100 words:**

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 thirty papers to Referred International Journals and seven 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, India. She is active member of Catalysis society of India, Korean Chemical Society and American Chemical Society.

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