

Defence Seminar

Seminar Title	: Studies on the Synthesis of Rare Earth Elements Based Nanomaterials for their Application to Remove Fluoride from Aqueous Medium
Speaker	: Satish Kumar Singh (Rollno : 519cy2024)
Supervisor	: Prof. Raj Kishore Patel
Venue	: Seminar Hall, Chemistry Department ,NIT,Rourkela
Date and Time	: 26 Dec 2024 (11 am)
Abstract	<p>: Excessive fluoride in water used for drinking causes a range fluoride related illnesses in the community. Remember that 1.5 ppm is the maximum amount of fluoride that the World Health Organisation recommends for drinking water. Worldwide, humans rely on groundwater for almost 80% of their drinking water needs. To get fluoride out of water, researchers have come up with a variety of methods and materials. Of the main approaches, adsorption stands out as the most practical, economical and long-term viable option for community use. The other two main ways are osmosis and ion-exchange. While numerous researchers and groups have synthesized adsorbents with significant defluoridation potential, few have achieved practical success for a variety of reasons. A simplified laboratory approach was employed to synthesize and assess a different type of adsorbent, drawing from literature reviews and other accessible references. In this regard the current effort concentrated on synthesizing cerium-based metal oxide/hybrid materials for defluoridation with excellent adsorption capacity. The ultimate characteristics of a material were discovered to be appropriate with high adsorption capacity, stability, and affordability and easy to use for eliminating fluoride from an effluent. As a result, Ce-based materials are synthesized, characterized, and tested to see how well they remove fluoride.</p> <p>(i) Lanthanum cerate (LCM)</p> <p>(ii) Yttrium cerate (YCO)</p> <p>(iii) Polypyrrole fabricated ceria (CPP-2)</p>