

EFFLUENT TREATMENT LABORATORY

Faculty Details:



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About the Laboratory:

The research work carried in effluent treatment lab involves,

- **Removal of heavy metals by artemia species through bioaccumulation**

Bioaccumulation of heavy metals by artemia franciscana. Metallothionein protein in the species plays a special role in accumulation of the toxic heavy metals from the liquid medium. Removal efficiencies upto 95% was achieved.

- **Red mud-based micro and nanoparticles for decolorization**

Green synthetic route using syzygium cumini leaves was used for production of nanoparticles. The biologically prepared nanoparticles and chemically prepared nanoparticles were immobilized on beads for dye decolorization and textile industry waste water.

- **Reduced graphene oxide nanohybrid for lithium-ion battery**

The 3D MS nanoflower distorts to an extent when embedded in reduced graphene oxide (MS/rGO) subjected to controlled thermal annealing under H₂ and CH₄. This leads to the formation of a new nanohybrid composed of MC attached to MS nanoflowers embedded in a reduced graphene oxide network M(S+C) /rGO.

- **Biological reactivity of aluminosilicate based materials**

Certain quantity of Alumina (Al₂O₃) and Silica (SiO₂) are carefully mixed and synthesized in such a way to analyze the biological response of the material. The biological response is studied by invitro analysis of various types of living cells.

- **Nontoxic nanosheets for wastewater treatment**

A simple one step method employed for synthesis of ternary material based nanosheets. The catalytic activity of the material was studied by photodegradation of the wastewater and toxicity tests on certain Artemia and bacterial species is also studied.

- **Transition metal dichalcogenide nanoparticles for electrochemical biosensing**

Transition metal dichalcogenides nanoparticles synthesized by various plant extracts. The physiochemical characterization revealed the formation of material and its compositional stoichiometry. The biosensing application of the synthesized material was analyzed through electrochemical approach.

- **Green nanotechnology for energy application**

The primary objective of this research work is development of metal oxide nanoparticles and its application as an emerging green catalyst. The research work is focused on lowering the photogenerated electron-hole recombination rate and extending the photon absorption edge to visible light region by green synthesis of eco-friendl. Metal oxide deposited carbon based nano particles

Accomplishment:

In our laboratory, among the 12 Phd scholars, two received CSIR- SRF fellowship during their research work. And more than 50 M.Tech students, more than 25 B.Tech students did their projects in waste water treatment with reasonable publications in reputed journals. Also our work Received Best Paper Award in International conference on Waste management at Sanfrancisco.

List of Major Equipments:

S.No.	Name of the Equipment
1.	Photocatalytic reactor
2.	Tubular furnace
3.	Muffle furnace
4.	UV spectroscopy
5.	Laminar Airflow

List of Research Scholars:

S. No.	Name	Thesis Title	Year of passing/Status
1	R.Sujatha Devi	Bioaccumulation of heavy metal ions using Artemia Franciscana	2015/ Completed
2	N.Elavarasi	Treatment of textile dye waste water using red mud based iron oxide nano particles	2017/ Completed
3	S.Kurunjiselvan	Development and Characterization of	2019/

		polyimide and polybenzoxazine based composites	Completed
4	G.Arunkumar	Synthesis and Characterization of side arm (polyarylene ethynlene) conjugated polymers	2019/ Completed
5	M.Sethu	Nano structured materials for photocatalysis and energy storage devices	2021/ Completed
6	M. Induja	Carbon based transition metal oxide for energy and environmental applications	2022/ Completed
7	K.Sivaprakash	Boron Carbon nitride-based nanocomposite for photocatalytic pollutant degradation and hydrogen production	2022/ Completed
8	K.VetriSelvan	Nontoxic nanosheets for wastewater treatment	Ongoing
9	B.Ramya	Transition metal dichalcogenide nanoparticles for electrochemical biosensing	Ongoing
10	S.Subhapiya	Biological reactivity of aluminosilicate based materials	Ongoing
11	R.Dhanapal	Production of biogas from plantain pseudo stem and purification and kinetic study	Ongoing
12	J. Yamini	Fabrication Of Metal Carbides/Nitrides for Energy and Environmental Application	Ongoing
