

Project Title

Advanced Photocatalytic Materials for Efficient Degradation of Emerging Water Pollutants

Applicant

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Project Overview

Water pollution caused by emerging organic contaminants such as dyes, pharmaceuticals, and industrial chemicals is a growing environmental challenge. Conventional wastewater treatment technologies often cannot completely remove these persistent pollutants. Photocatalysis has emerged as a promising advanced oxidation technology capable of degrading harmful contaminants using light-driven catalytic reactions.

This project aims to develop novel plasmonic semiconductor photocatalysts with enhanced visible-light activity for efficient degradation of organic pollutants in wastewater. The research will focus on designing advanced heterojunction photocatalysts with improved light absorption, efficient charge separation, and high catalytic stability.

Expected Outcomes

The project will deliver high-performance photocatalytic materials capable of efficiently degrading persistent pollutants under visible light. The developed materials may contribute to more sustainable and energy-efficient wastewater treatment technologies.

Industrial Relevance

The research has strong potential applications in wastewater treatment plants, industrial effluent purification, and environmental remediation technologies, offering industry partners innovative solutions for advanced water treatment and pollution control.