

Title :-

DEVELOPMENT OF HIGH-PERFORMANCE ELECTRODES
FOR WATER ELECTROLYSIS

BACKGROUND:-

Hydrogen production via water electrolysis is a promising approach for sustainable energy storage and conversion. However, the efficiency and durability of electrocatalysts remain significant challenges.

RESEARCH OBJECTIVES:

Design and synthesize novel electrocatalyst materials with enhanced activity and stability.

Investigate the electrochemical properties and mechanisms of the developed materials.

Optimize electrode architectures for improved performance.

METHODOLOGY:-

Material synthesis: Develop new electrocatalyst materials using various techniques (e.g.: sol-gel, hydrothermal).

Electrochemical characterization: Conduct electrochemical measurements.

Material characterization:- Utilize techniques like X-ray diffraction, transmission electron microscopy and X-ray photoelectron spectroscopy.

EXPECTED OUTCOMES:

Identification of high-performance electro-catalyst materials.

Understanding of electrochemical mechanisms and structure-activity relationships.

Development of efficient and durable electrodes for water electrolysis.

IMPLICATIONS

The proposed research aims to contribute to the development of sustainable hydrogen production technologies, supporting the transition to a low-carbon energy future.