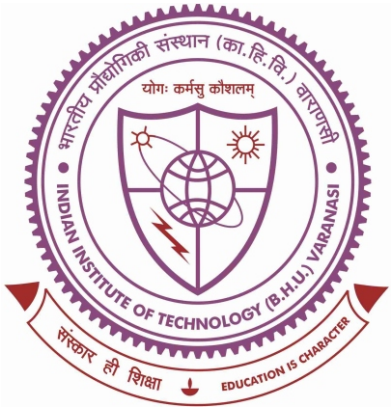
Understanding of Redox Interactions of Transition Metal Ions in Different Lattices to Develop Superior Water Splitting Electrocatalysts



Thesis submitted in partial fulfillment for the Award of Degree

Doctor of Philosophy

By

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I, **Shraddha Jaiswal,** certify that the work embodied in this thesis is my own bonafied work carried out by me under the supervision of **"Dr. Asha Gupta"** from **Jan 2019** to **Dec 2024,** at the **Department of Chemistry, Indian Institute of Technology (BHU), Varanasi**. The matter embodied in this thesis has not been submitted for the award of any other degree/diploma.

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XRD- X-ray Diffraction

HR-SEM- High-Resolution Scanning Electron Microscope

HR-TEM- High-Resolution Transmission Electron Microscope

EDX or EDS- Energy Dispersive X-ray Spectroscopy

SAED- Selected Area Electron Diffration

FTIR- Fourier Transform Infrared Spectroscopy

XPS- X-ray Photoelectron Spectroscopy

ICP-MS- Inductively Coupled Plasma Mass Spectrometry

BET- (Brunauer, Emmett, and Teller) specific surface

OER- Oxygen Evolution Reaction

CV- Cyclic Voltammetry

LSV- Linear Sweep Voltammetry

EIS- Electrochemical Impedance Spectroscopy

CA- Chronoamperometry

CDL- Double Layer Capacitance

ECSA- Electrochemically active surface area

RHE- Reversible Hydrogen Electrode

RP- Ruddlesden-Popper phase