

**Exploration of  $\text{LiCrO}_2$  Based Superior OER  
Catalysts: Understanding the Role of Structural  
Defects and Relative Ionicity of M-O Bonds in  
Doped Layered Oxides**



Thesis submitted in partial fulfilment for the award of the Degree  
of

*Doctor of Philosophy*

by

**VAISHALI SONI**

DEPARTMENT OF CHEMISTRY  
INDIAN INSTITUTE OF TECHNOLOGY  
(BANARAS HINDU UNIVERSITY)  
VARANASI – 221005 INDIA

ROLL No.: 18051006

YEAR: 2024

*Dedicated to my Beloved Parents and Family*



भारतीय  
प्रौद्योगिकी  
संस्थान  
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It is further certified that the student fulfilled all the requirements of the comprehensive examination, candidacy and SOTA for the award of Ph.D. degree.

**Dr. Asha Gupta**  
(Supervisor)

Assistant Professor,  
Department of Chemistry  
Indian Institute of Technology (BHU)  
Varanasi-221005, (U.P.), India

**Head of the Department**

Department of Chemistry  
Indian Institute of Technology (BHU)  
Varanasi-221005, (U.P.), India  
विभागाध्यक्ष / HEAD  
रसायन विज्ञान विभाग  
Department of Chemistry  
भारतीय प्रौद्योगिकी संस्थान (का.हि.वि.वि.)  
Indian Institute of Technology (B.H.U.)  
वाराणसी-221005/Varanasi-221005

*Dr. Asha Gupta*

Assistant Professor/सहायक प्राध्यापक  
Department of Chemistry  
रसायन विज्ञान विभाग  
Indian Institute of Technology (BHU)  
भारतीय प्रौद्योगिकी संस्थान (का.हि.वि.वि.)  
Varanasi-221005/वाराणसी-221005



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Date: 20/02/2024  
Place: IIT (BHU), Varanasi

*Vaishali Soni*  
(Ms. Vaishali Soni)

### CERTIFICATE BY THE SUPERVISOR

It is certified that the above statement made by the student is correct to the best of our knowledge.

**Dr. Asha Gupta**  
(Supervisor)  
Assistant Professor,  
Department of Chemistry  
Indian Institute of Technology (BHU)  
Varanasi-221005, (U.P.), India

*Dr. Asha Gupta*  
Assistant Professor/सहायक प्राध्यापक  
Department of Chemistry  
रसायन विज्ञान विभाग  
Indian Institute of Technology (BHU)  
भारतीय प्रौद्योगिकी संस्थान (का.हि.वि.वि.)  
Varanasi-221005/वाराणसी-221005

**Head of the Department**  
Department of Chemistry  
Indian Institute of Technology (BHU)  
विभागाध्यक्ष / HEAD  
Varanasi-221005 (U.P.), India  
रसायन विज्ञान विभाग  
Department of Chemistry  
भारतीय प्रौद्योगिकी संस्थान (का.हि.वि.वि.)  
Indian Institute of Technology (B.H.U.)  
वाराणसी-२२१००५ / Varanasi-221005



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**Name of the Student:** VAISHALI SONI

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Date:  
Place: IIT (BHU), Varanasi

Vaishali Soni  
(Research Scholar)

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## **List of abbreviations**

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 Diffraction

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

LMO- Layered Lithium Transition-metal Oxides