Harpreet SINGH

P.h.D - Electrochemistry (Sept. 2024) Master's - Nanoscience & Nanotechnology Bachelor's - Electronics and communication



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EDUCATION

2021 - Sept. 2024 Ph.D - Electrochemistry

University of Lorraine-CNRS, Nancy, France

2016 - 2018

2011 - 2015

M.Tech - Nanoscience & Nanotechnology

Panjab University, Chandigarh, India CGPA - 8/10

B.Tech - Electronics and Communication

Punjab Technical University, Jalandhar, India

CGPA - 7.7/10

TECHNICAL SKILLS

- Therman evaporation deposition
- Microelectrode fabrication
- Microfuidic device fabrication
- Scanning electrochemical microscopy
- UV-Visible spectroscopy
- Gel phase chromatography
- Atomic force Microscopy
- X-Ray Diffraction spectroscopy
- 3D printing (FDM, SLS, & Ink extrusion)
- Electrochemical quartz crystal measurements
- Impedance methods (EIS & IA (HP4194A))
- FTIR Spectroscopy
- Raman spectroscopy
- Ellipsometry
- Spin deposition
- EUV lithography (ASML NXE 3300B scanner & Litho track)
- Cleanroom 1 & 1000

SOFTWARE SKILLS

- LabView
- MATLAB
- Origin Lab
- AutoDesk fusion 360
- AutoDesk Eagle
- Visual Basics

- Microsoft office suite
- Nova (Meterohm)
- EC-Lab (BioLogic)
- PStrace (Palmsens)
- C/C++ (Arduino)
- PrusaSlicer / Prontrface

LANGUAGE

- English (Fluent)
- French (A2)

- Hindi (Fluent)
- Punjabi (Fluent)

REFERENCES

Mathieu Etienne

Deputy Director, Laboratory of Physical Chemistry and Microbiology Materials and the Environment (LCPME), Villers-lès-Nancy, France

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Liang Liu

Chargé de recherche - HDR, Laboratory of Physical Chemistry and Microbiology for Materials and the Environment (LCPME), Villers-lès-Nancy, France

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WORK EXPERIENCE

Doctoral researcher

(Sept. 2021 - Present)

LCPME-CNRS/University of Lorraine, Nancy, France Through this project, I acquired expertise in material synthesis, particularly with MXenes, along with proficiency and functionalization processing techniques. Additionally, I honed my skills in device handling, programming, and understanding of electrochemical methods for conducting in-situ/Operando analysis. This knowledge was instrumental in engineering electrode designs using 3D printing, aiming to enhance performance

effectively.

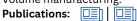
Publications: Under process | Under process (UP)

Junior Research Fellow (Nov. 2019 – July 2021) Indian Institute of Technology Delhi (IITD), INDIA In this project, I developed microfluidic chip design skills through photolithography and CO2 laser engraving, focusing on improving production efficiency. Combining this with my knowledge of circuits and sensors, I innovated portable systems for real-time analyte analysis and quantification.

(App No.: 21860791.9) Publications: UP Patent:

(August 2018 - May 2019) **Research Assistant** Interuniversitair Micro-Electronica Centrum (IMEC), Leuven, Belgium

During this project, I acquired skills in handling thin films (10-50 nm) and analyzing them using spectroscopy and chromatography techniques. These capabilities contribute to the advancement of EUV lithography towards highvolume manufacturing.



Master's thesis

(August 2017 - June 2018)

Panjab University, Chandigarh, India

In this project, I learned material handling and processing through wet chemistry, coupled with analytical and electrochemical analysis techniques. These skills were utilized to evaluate MoSe2/WSe2 heterostructures for the Hydrogen Evolution Reaction (HER).

Publication:

Internship - Bachelor's thesis (Jan 2015 - June 2015) CSIR-CSIO, Chandigarh, India

Through this project, I learned to manage data acquisition systems and develop predictive models for early forecasting of crop disease severity, This aids farmers in optimizing pesticide usage for effective pest control.

Publication: 💷

EXTRA CURRICULUM

2022 - 2023	Group meetings organizer
	ELAN team, LCMPE-CNRS
2022	Industry 4.0
	French-German Workshop, Technical
	University of Kaiserslautern, Germany

2022 **MOOC PhD and Career Development** PhDOOC association

2022 Entrepreneurship DeepTech Tour Lorraine 2022

2021 Discover entrepreneurship