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 **M.Tech - Nanoscience & Nanotechnology**
Panjab University, Chandigarh, India
CGPA - 8/10

2011 - 2015 **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 for Materials and the Environment (LCPME), Villers-lès-Nancy, France
mathieu.etienne@univ-lorraine.fr

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 in functionalization and 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.
Publications: UP **Patent:** (App No.: 21860791.9)

Research Assistant (August 2018 – May 2019)
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 high-volume manufacturing.
Publications:

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*