Sweta Sharma | Research Scholar

Chandigarh, PB

officialswetas@gmail.com +91 7340919152

linkedin.com/in/sweta-sharma-337688284

Summary

Scientific researcher in field of Materials Science & Photoelectro-chemistry along with a demonstrated history of working in national research laboratories R&D units. Dynamic, results-oriented, self-motivated professional with strong interpersonal skills obtained via extensive training in cross-functional teams. I am keenly interested in sustainable technologies development and aspire to become a highly skilled R&D professional that brings significant material and process improvements, which can impact the quality of life of all. Proficient in project planning and management as well as interdisciplinary research collaborations.

My research expertise is in the domain of Material Synthesis, techniques and associated affordable and system development for green hydrogen generation by leveraging Photoelectro-chemical technique along with waste water treatment.

Knowledge of characterization tools such as FT-IR, Raman spectroscopy, XRD, XPS, SEM, TEM, PL, AFM, UV-Vis spectroscopy, GC-MS, and HPLC. Exposure on various software's such as Origin, Avantge, imagej, Canva, Xpert high score, etc. A self-motivated go-getter with strong communication, inter personnel skills, critical thinking & problem solving skills. So far, my research papers have been published in Journal of Nanotechnology, two book chapter published in Willey and Springer. Another 3 research articles are pending for publication.

Professional Skills:

- Research and Development (R&D), Data Analysis, Raman Spectroscopy
- Powder X-ray Diffraction, Electron microscopy (SEM-EDX, TEM), Impedance Spectroscopy
- UV/Vis Spectroscopy, Photoluminisense, X-ray photoelectron spectroscopy
- Tools: Origin, Avantge, imagej, Canva, Xpert high score

Certificates

Poster presentation/ACS Student chapter – The Institute of Nano Science and Technology (INST)

Poster Presentation/Chemcatcon - Indian Institute of Technology Gandhinagar

Professional Experience

CSIR-Central Scientific Instruments Organization/IIT Mandi Aug 2021 - Present (2 years)
Research Scholar

- Gained exposure on various synthesis and characterization of 2D Materials like MoSe2, MoS2, WS2, and MXene and their Heterostructures.
- Making use of above mentioned 2D Materials/heterostructures in application (Photoelectro-chemical Waste Water Treatment and Green Hydrogen Generation).
- Trained in different methods of Photoelectrode synthesis, characterization and lab-scale testing

units. Writing technical papers and annual reports.

- Enhanced stability and performance of mainly Photocathodes and Materials characterizations (physical- electrochemical analysis).
- Repeated optimization of materials by thorough testing. Scale up of Reactors and materials (Photoelectrodes). Developed easy and efficient fabrication process.
- Detailed review of the materials and process involved. Identifying problems and suggesting solutions along with using data to substantiate decision-making.
- Presenting the results in conferences, workshops, seminars and dissemination of the results by publishing internationally. Confer with senior scientists, advisor and team members.
- Analyzed, interpreted, organized and prepared data for presentation at research meetings.
- Develop and optimize processes and workflows; respond and adapt to evolving research priorities; and train and supervise volunteer research personnel.
- Developed new quality control and assurance procedures to reduce external vendor costs and labor hours within company departments.
- Compiling the observations and presenting in review meetings.
- Publishing research outcomes in internationally acclaimed journals.
- Guiding M.Tech. and B.Tech. student for the projects and evaluate reports. Selected and negotiated pricing for all hardware, instruments and consumables needed to provision lab.
- Responsibility for all aspects of lab operations including equipment control and maintenance, resource and project scheduling, training and supervision, supply inventory and ordering, as well as all project- related documentation and reporting.

Education

- **University of Rajasthan** **Jul 2018 - Sep 2020**
  Master of Science - MS, Physical Sciences
  Studied Quantum Physics, Electromagnetic Theory, Condense Matter Physics, Mathematical Physics, Nuclear Physics, Electronics, etc.
- **University of Rajasthan** **Jul 2015 - Jun 2018**
  Bachelor of Science - BS, Physics, Chemistry and Mathematics
- **AcSIR-CSIO** **Aug 2021 - Present**
  PhD, Material Science, Semiconductor Physics and Electro Chemistry
  Development of studies on the synthesis of various 2D transition metal dichalcogenides (TMDS), MXene based heterostructures and their application towards photoelectrochemical waste water splitting, simultaneous green hydrogen generation.

Publications

- Sharma, S., Devi, P. and Arora, S.K., 2023. MoSe2 nanosheets/SiNWs heterojunction-based photocathode for efficient photoelectrochemical water splitting applications. Nanotechnology.
- Swapna Pahra, Sweta Sharma, and Pooja Devi (2022) "Fundamental Understanding and Figure of Merits for Electrocatalytic and Photo electrocatalytic H2 production" In P. Devi (Ed.), "Green

Energy Harvesting: Materials for Hydrogen Generation and Carbon Dioxide Reduction" Wiley, ISBN: 1119776058, 9781119776055.

- Singh, P., Sharma, S. and Devi, P., 2023. 2D Nanomaterial Photoelectrodes for Photoelectrochemical Degradation of Pollutants and Hydrogen Generation. In Two-Dimensional Materials for Environmental Applications (pp. 299-325). Cham: Springer International Publishing.
- Sweta Sharma, Aditi Halder and Pooja Devi, (under process)"Ti3C2 -MoS2@Si-NWs based dual functional photocathode for efficient wastewater to hydrogen generation and water treatment" (Under review).
- Sweta Sharma, Pooja Devi "Photoelectrocatalysis and Nanohybrids in Wastewater Treatment'' (Under review).
- Pooja Singh, Swapna Pahra, Sweta Sharma, and Pooja Devi "Progress in Catalytic Materials for Simultaneous Waste Water Treatment and Hydrogen Production" (under process).