

CURRICULUM VITAE

Dr. Swati Sahu

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JOB OBJECTIVE

Physics Lecturer with exceptional teaching abilities seeking employment in your organization.

QUALIFICATION

Doctor of Philosophy, 2019

Thesis Title: Development of High-Efficiency Low-Cost Dye-Sensitized Solar Cell.

Supervisor: Prof. Sanjay Tiwari

S.O.S. in Electronics & Photonics,
Pt. Ravishankar Shukla University,
Raipur (C.G.)

M.Tech. in Opto-electronics & Laser Technology, 2013

Pt. Ravishankar Shukla University, Raipur

74% Passed with merit

M.Sc. in Physics, 2011

Pt. Ravishankar Shukla University, Raipur

64% Passed with merit

B.Sc. in IT, 2009

Central College of IT, Raipur

KEY ACHIEVEMENTS

17th Chhattisgarh Best Young Scientist Award-2019 in Physical Sciences

WORK EXPERIENCE

I have been teaching undergraduate students (B.Voc.) for the last two years at the Institute of Renewable Energy Technology & Management, Pt. Ravishankar Shukla University, Raipur (C.G.). The courses I have offered include: *Fundamentals of Electronics, Applied Physics, Material Science, Report Writing, Industrial Electronics & Instrumentation, and Innovation in Science.*

RESEARCH

- Modeling & Simulation of Dye-sensitized Solar Cells (Organic Solar Cells) Based on COMSOL Multiphysics Software.
- Fabrication and Characterization of the Dye-sensitized Solar Cells.
- I carried out the fabrication work and characterization at the Photonic Research Laboratory of S.O.S in Electronics and Photonics, Pt. Ravishankar Shukla University, Raipur. Later on, I visited the Inorganic and Physical Chemistry Division, CSIR-Indian Institute of Chemical Technology, Hyderabad for further improvement in efficiency under optimized fabrication and characterization conditions.

PUBLICATIONS

Publication in Journals Repute

1. "Sustainability and Prolonging Rechargeable Battery Life: A Sensor Device Review." **S. Sahu** & S. Tiwari. Journal of Electronics and Electrical Engineering, 2(1), 5, 2023.
2. "Analysis of Pseudo-Homogeneous and Bulk Charge Transfer in Dye-Sensitized Solar Cells." **S. Sahu** & S. Tiwari. Applied Solar Energy, 57(5), 355-362, 2021.
3. "Minimization of voltage loss by using alternative electron transporting materials allows a more efficient solid-state dye-sensitized solar cell" **S. Sahu** and S. Tiwari. Academia Letters, 3070, 1-4 (2021).
4. "Electrical Modeling of Dye-Sensitized Solar Cells for Improving the Overall Photoelectric Conversion Efficiency." **S. Sahu**. Journal of Ravishankar University (Part-B: Science), 32 (1), 84-89, 2019.
5. "Enhanced Photovoltaic Performance via Co-sensitization of Ruthenium (II)-Based Complex Sensitizers with Metal-Free Indoline Dye in Dye-Sensitized Solar Cells." **S. Sahu**, M. Patel, A. Verma, S.P. Singh and S.Tiwari. Journal of Organic Photonics and Photovoltaics 5.1, 9-15, 2017
6. "Enhanced Photovoltaic Performance of Dye-Sensitized Solar Cells via Sensitization of Nanocrystalline TiO₂ Films with Metal-Free Indoline Dye." **S. Sahu**, R. Awasthy, M. Patel, A.Verma, S.P. Singh and S.Tiwari. Journal of Ravishankar University-B, 30 (1&2), 78-81, 2017.
7. "Study of light trapping geometries for different structure of photoanode in dye-sensitized solar cells." **S. Sahu**, M. Patel, A. Verma and S. Tiwari. I. Journal of Scientific and Engineering Research, 8, 2229-5518, 2017.

Book Chapters

1. "Carbon Allotropes in Waste Decomposition and Management." **S. Sahu**, G. S. Rathore and S. Tiwari. Carbon Allotropes and Composites: Materials for Environment Protection and Remediation, Scrivener Publishing LLC 229–256, 2023.
2. "Ionic Liquid-Based Electrolyte for Application in Photoelectrochemical cells: A Future Insight." **S. Sahu**, and S. Tiwari. Ionic Liquids, Bentham Science Publishers, 339-367, 2023.
3. "Adsorption at high temperature and extreme conditions." **S. Sahu** and S. Tiwari. Adsorption through Advanced Nanoscale Materials: Applications in Environmental Remediation, Elsevier B.V., 2023, ISBN: 9780443184567.
4. "Carbon Allotropes: Fundamental, Synthesis, Characterization, and Properties Functionalization." **S. Sahu** and S. Tiwari. Carbon Allotropes: Advanced Materials for Anticorrosive Coatings, CRC Book 2023 (Accepted).
5. "Functionalized carbon dots as self-healing anticorrosive materials." **S. Sahu** and S. Tiwari. Advanced Anti-corrosive Materials. Taylor & Francis Group (CRC book) 2023 (Accepted).
6. "Quantum Dot as Light Harvester Nanocrystals for Solar Cell Applications." M. Patel, **S. Sahu**, A.K. Verma, P. Agnihotri, S. P. Singh, R. Narayan and S. Tiwari. In Special Volume on "Recent Advances in Photovoltaic" under 'Materials Research Foundation Series', Material Science Research Forum LCC, Millersville PA 17551, 117-133, 2017.
7. "Recent advances in polymer solar cells." A.K. Verma, P. Agnihotri, M. Patel, **S. Sahu**, and S. Tiwari. In Special Volume on "Recent Advances in Photovoltaic" under 'Materials Research Foundation Series', Material Science Research Forum LCC, Millersville PA 17551, 299-309, 2017.
8. "Advancement in simulation and modeling of organic solar cells." P. Agnihotri, M. Patel, A. Verma, **S. Sahu**, S. Pathak, and S. Tiwari. In Special Volume on "Recent Advances in Photovoltaic" under 'Materials Research Foundation Series', 17551, Material Science Research Forum LCC, Millersville PA, 17551, 309-332, 2017.

Publication in Conference Proceedings

1. "Analytical Study of Current Density-Voltage Relation in Dye-Sensitized Solar Cells using Equivalent Circuit Model." **S. Sahu**, M. Patel, A. Verma and S. Tiwari. In *2017 International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS)*, pp. 1489-1493. IEEE, 2017.
2. "Fabrication and characterization of nanoporous TiO₂ layer on photoanode by using doctor blade method for dye-sensitized solar cells." **S. Sahu**, R. Awasthy, M. Patel, A. Verma, P. Agnihotri and S. Tiwari. *International Conference on Fibre Optics and Photonics*, pp. Th3A-9. Optical Society of America, 2016.

3. "Investigating the influence of porosity the on performance of dye-sensitized solar cells." **S. Sahu**, A. Verma, M. Patel, R. Awasthy and S. Tiwari. *International Conference on Fibre Optics and Photonics*, pp. T3A-73. Optical Society of America, 2014.
4. "Recent advances & perspectives the in electron transport layer of organic solar cells for efficient solar energy harvesting." P. Agnihotri, **S. Sahu**, S. Tiwari. In 2017 International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS), pp. 1568-1573. IEEE, 2017.
5. "Fabrication and characterization of CdSe quantum dot-sensitized solar cells by successive ionic layer adsorption and reaction (SILAR) process." M. Patel, S.P. Sahu, **S. Sahu**, A.K. Verma, P. Agnihotri, and S. Tiwari. In International Conference on Fibre Optics and Photonics (pp. W3A-37). Optical Society of America 2016.
6. "Fabrication and characterization of novel inverted organic solar cells employing ZnO ETL and MoO₃ HTL." A.K Verma, P. Agnihotri, M. Patel, **S. Sahu** and S. Tiwari. In International Conference on Fibre Optics and Photonics, pp. Tu4A-4. Optical Society of America, 2016.
7. "Optoelectronic Simulation for Light enhancement of P3HT: PC70BM Conventional BHJ OSCs." P. Agnihotri, A.K. Verma, M. Patel, **S. Sahu**, and S. Tiwari. In International Conference on Fibre Optics and Photonics, pp. Th4B-18. Optical Society of America, 2016.
8. "Solution-processed solar cells based on in-situ synthesis of CdSe quantum dots." M. Patel, **S. Sahu**, A.K. Verma, and S. Tiwari. In 2017 International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS) (pp. 1683-1687). IEEE, 2017.

PATENT & COPYRIGHT

1. Government of India Patent:

Patent Publication

Title of Invention: SB-DOPED BASNO₃ AS NOVEL ELECTRON TRANSPORT LAYER FOR EFFICIENT LOW-COST DYE-SENSITIZED SOLAR CELLS.

Publication Date: 04/03/2022

Application No.: 202221001677

2. Government of India Copyright:

Title of Work: COUPLED OPTICAL AND ELECTRICAL SIMULATION OF EFFICIENT MAPbI₃-XCIX PEROVSKITE/SILICON SOLAR CELLS.

Diary Number: 8356/2022-CO/L

SOFTWARE PROFICIENCIES

Languages: C, C++, JAVA

Operating System: Windows-7/Vista/ XP /2000/9X, DOS 6.0

Software Tools: COMSOL Multiphysics, MatLab, Silvaco

PROFESSIONAL MEMBERSHIP

Life Member of Chhattisgarh, Vigyan Bharati Sansthan, Raipur (C.G.)

PERSONAL INFORMATION

Name	Dr. Swati Sahu
Husband Name	Dr. Nishant Kumar Sahu
Date of birth	10 th May 1988
Gender	Female
Medium	English
Marital status	Married
Nationality	Indian
Language	English & Hindi

DECLARATION

I hereby declare that the above information is true to the best of my knowledge and beliefs and I know that my candidature for the appointment can be canceled without any notice if any information is found wrong after my appointment.

PLACE: RAIPUR

Dr. Swati Sahu

