Dr. Vidya Raj
Associate Professor
Nanoscience & Technology
Email: vdr.ece@psgtech.ac.in
Phone:
Address: Room No., Floor No.2,
I-Block,
PSG Institute of Advanced Studies,
Peelamedu, Coimbatore-641004

**BIOSKETCH**

Dr. Vidya Raj is an experimental researcher specializing in hydrogen production, storage, and utilization, with expertise in electrolyzers, fuel cells, and hydrogen storage technologies. She joined the Electronics and Communication Engineering Department at PSG College of Technology, Coimbatore, as an Associate Professor on 11th August 2025, while pursuing her research activities at PSG Institute of Advanced Studies. She earned her Master's degree in Nanoscience and Technology from PSG College of Technology, Coimbatore, and subsequently completed her Ph.D. in Perovskite Photovoltaics at the Indian Institute of Technology (IIT) Bombay. Following her doctorate, she worked as an Institute Postdoctoral Researcher in the Department of Chemical Engineering at the Indian Institute of Technology (IIT) Madras.

## Educational Profile

- **Doctor of Philosophy (Ph.D.) in Nanoscience and Technology**
  Year of Passing: 2022
  ***Thesis title:*** Impression of Ion Migration on the Device Operation of Perovskite Photovoltaics
  Thesis Supervisor: Prof. Shaibal K. Sarkar, Associate Professor, Dept. of Energy Science and Engineering, Indian Institute of Technology Bombay

- **Master of Technology (M. Tech) in Nano Technology**
  PSG College of Technology, Coimbatore, Tamil Nadu.

- **Bachelor of Technology (B. Tech.) in Electronics and Communication Engineering**
  Government Engineering College Wayanad, Kerala.

## Positions Held

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| Aug'25 – Present | Associate Professor<br>Department of Electronics and Communication Engineering<br>PSG College of Technology<br>Peelamedu, Coimbatore |
| Jan'23 – Aug'25 | Postdoctoral Researcher<br>Mentor: Prof. Aravind Kumar Chandiran<br>Solar Energy Research Group<br>Department of Chemical Engineering<br>Indian Institute of Technology, Madras |

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| Jan'22 – Dec'22 | Institute Postdoctoral Researcher<br>Mentor: Prof. Aravind Kumar Chandiran<br>Solar Energy Research Group<br>Department of Chemical Engineering<br>Indian Institute of Technology, Madras |
| June'12 – Dec'16 | Assistant Professor, TKM Institute of Technology, Kollam Kerala |
| Dec'08-March'10 | Lecturer, College of Engineering, Kottarakara (IHRD), Kollam, Kerala |
| June'08-Dec'08 | Lecturer, S. N. Polytechnic College Kottiyam, Kollam, Kerala |

## Research Areas

- Title 1 Hydrogen storage techniques
- Title 2 Fuel Cells
- Title 3 Electrolyzers

## Awards & Achievements

1. Best Poster presentation, GHATS 2025, Indian Institute of Technology Palakkad, Kerala (June 2025).
2. Best Project Award during M.Tech. (Nanotechnology) at PSG College of Technology, Coimbatore.
3. Best Poster Award at second International Conference on Advanced Materials for Power Engineering (ICAMPE-2016) held at International and Inter University of Nanoscience and Nanotechnology, Kottayam, Kerala, India (Nov 2016).
4. Best Paper Award at COMSOL conference 2011, Bangalore, India (Sept 2011).
5. Best Paper Award under Nanotechnology and Energy category in 2nd National Conference on Micro and Nanotechnologies (NCMN-2012), PSG College of Technology, Coimbatore, India (Nov 2011).

## Patents

1. System for the measurement of polarization-induced charge transfer in optoelectronic and photoelectrochemical devices. Vidya Raj, Abhishek Anand, A.K. Chandiran. (Patent is filed)

## Journal Publications

1. Vidya Raj, Shubham Ajaykumar Rajput, Aravind Kumar Chandiran, "Leveraging the Anomalous Photovoltaic Effect in Halide Perovskite-Based Photovoltaics" *Small*, 2503460 (2025).
2. Vidya Raj, Abhishek Anand, Manasa Manoj, and Aravind Kumar Chandiran, Bipolaron Hopping Conduction in Vacancy-Ordered Cs2PtI6 Perovskites, *Dalton Transactions*, 2025.

3. Vidya Raj, Abhishek Anand, Aravind Kumar Chandiran, Redox-Mediated Charge Conduction in Vacancy-Ordered Ruthenium Halide Perovskites (under review).
4. Aparajita Das, Jigar Shaileshkumar Halpati, Vidya Raj, Aravind Kumar Chandiran, "Highly Stable BaZrS3 Chalcogenide Perovskites Augment the Photoelectrochemical Water Oxidation", *ACS Energy & Fuels* 38, 22527-22535 (2024).
5. Poonam Sikarwar, Puneet Siwach, Shubham Ajaykumar Rajput, Abhishek Anand, Vidya Raj, Sudhadevi Antharjanam, Aravind Kumar Chandiran, Non-centrosymmetric antimony-based organic-inorganic hybrid halides for broadband light emission with 13.1% room temperature photoluminescence quantum yield (under review).
6. Vidya Raj, Shaibal K Sarkar, Eradication of non-capacitive effects with potassium incorporation in perovskite solar cells, *J. Appl. Phys.* 128, 055501 (2020).
7. Vidya Raj, Sudeshna Ghosh, Shaibal K Sarkar, Transient Photovoltage Overshoot in Multi-Cation Perovskite Solar Cells: An Interplay Between Interfacial Ionic Layer and Photoinduced Electric Field, *Solar Energy Materials and Solar Cells* 230, 111276 (2021).