Faculty Profile

Brief Profile

Dr. Swetha S M has expertise in materials science, with a focus on the synthesis of nanomaterials and their applications in the energy. Her research interests include the synthesis of metal oxide nanomaterials using wet chemical processes, as well as advanced structural analysis through Rietveld refinement techniques. She has extensive experience in analyzing metal oxides using X-ray, synchrotron, and neutron powder diffraction data. Dr. Swetha's research spans a wide range of applications, including photocatalytic dye degradation, photoelectrochemical water splitting, and battery materials.

Personal Information

- **Name:** Dr. Swetha S M
- **Designation:** Assistant Professor
- **Department:** Chemistry
- **Email:** swethasm@rvce.edu.in
- **Phone:**

Google Scholar: https://scholar.google.com/citations?user=-jShZyAAAAAJ&hl=en

ResearchGate:

LinkedIn:

ORCID: https://orcid.org/0000-0002-5379-9827

Domain of Expertise

Research Focus

- **Primary Area:** Synthesis of nanomaterials for energy applications
- **Allied Areas:**
  - Photoelectrochemical water splitting for hydrogen generation
  - Structure property correlation studies on metal oxides
  - Battery materials.

Academic Qualifications

- **Ph.D.**: Materials Science, Manipal University, 2015, “Investigation of smart oxide nanomaterials for photoluminescent and photocatalytic applications”.
- **M.Sc.: Chemistry**, Kuvempu University, 2009
- **Postdoctoral Research:**

- IISER Thiruvananthapuram, 2015-2016
- Seoul National University, South Korea 2016-2020

Professional Experience

Experience Nil			
S.No	**Institute/College/Industry**	**Job Title**	**Duration (From- To)**
1.	RV College of engineering	Assistant Professor	2022-present

Publications & Patents

Journal Publications

1. S. M. Bhat Swetha, S. A Lee, T. H. Lee, C. Kim, J. Park, T. W. Lee, S. Y. Kim, H. W. Jang, *"All Solution Processed $BiVO_4/TiO_2$ Photoanode with $NiCo_2O_4$ Nanofiber Cocatalyst for Enhanced Solar Water Oxidation"*, ***ACS Appl. Energy Mater***. 2020, 3, 6, 5646−5656.

2. **Swetha S. M. Bhat**, Sang Eon Jun, Sol A Lee, Tae Hyung Lee and Ho Won Jang *"Influence of C_3N_4 Precursors on Photoelectrochemical Behavior of TiO_2/C_3N_4 Photoanode for Solar Water Oxidation*", ***Energies,*** 2020, *13,* 4, 974.

3. **Swetha S M Bhat**, Sachin A Pawar, Darshna Potphode, Chang-Ki Moon, Jun Min Sun, Changyeaon Kim, Seokhoon Choi, Dipali S Patil, Jang-Joo Kim, Jae Cheol Shin, and Ho Won Jang, *"Substantially Enhanced Photoelectrochemical Performance of TiO_2 Nanorods/CdSNanocrystals Heterojunction Photoanode Decorated with MoS_2 Nanosheets", **App. Catal. B: Environ**.,* 2019, 259, 1181022.

4. **Swetha S M Bhat**, Jun Min Suh, Jongwon Lee, Kyoung Soon Choi, Seong-Hyeon Hong, Jae Cheol Shin, Ho Won Jang, *Photoelectrochemical Hydrogen Production at Neutral pH Phosphate Buffer Solution Using TiO_2 Passivated InAs Nanowire/p-Si Heterostructure Photocathode"*
Seokhoon Choi, Jeongwoo Hwang, Tae Hyung Lee, Hyung-Ho Kim, Seung-Pyo Hong, Changyeon Kim, Min-Ju Choi, Hoon Kee Park, ***Chem. Eng. J.*** doi.org/10.1016/j.cej.2019.123688.

5. Bo Reum Lee, Mi Gyoung Lee, Hoonkee Park, Tae Hyung Lee, Sol A Lee, **Swetha S M Bhat**, Changyeon Kim, Sanghan Lee, and Ho Won Jang *"All-Solution-Processed $WO_3/BiVO_4$ Core−Shell Nanorod Arrays for Highly Stable Photoanodes", **ACS Appl. Mater. Inter.***, 2019, 11, 20004−20012.

6. **Swetha S M Bhat**, Jun Min Suh, Seokhoon Choi, Seung-Pyo Hong, Sol A Lee, Changyeon Kim, Cheon Woo Moon, Mi Gyoung Lee, and Ho Won Jang, *"Substantially Enhanced Front Illumination Photocurrent in Porous SnO_2 Nanorods/Networked $BiVO_4$ Heterojunction Photoanodes", **J. Mater.Chem. A**,* 2018, 6, 14633.

7. **Swetha S M Bhat**, Tae Hyung Lee, Sol A Lee, Kootak Hong, Min-Ju Choi, eung-Pyo Hong, Jongseong Park, Mohammadreza Shokouhimehr, and Ho Won Jang, *"Comprehensive Study on the Morphology Control of TiO_2 Nanorods on Foreign Substrates by the Hydrothermal Method",* S ***Cryst. Growth Des.***, 2018, 18, 11, 6504–6512.

8. **Swetha S M Bhat**, Sol A Lee, Jun Min Suh, Seung-Pyo Hong, and Ho Won Jang, *"Triple Planar Heterojunction of $SnO_2/WO_3/BiVO_4$ with Enhanced Photoelectrochemical Performance under Front Illumination", **Appl. Sci.*** 2018, *8,* 10, 1765.

9. **Swetha S M Bhat**, and Ho Won Jang, *"Recent Advances in Bismuth-Based Nanomaterials for Photoelectrochemical Water Splitting", **ChemSusChem**,* 2017, 10, 15, 3001–3018.

10. **Swetha S M Bhat**, Binson Babu, Mikhail Feygenson, Joerg C Neuefeind, and M M Shaijumon, *"Nanostructured $Na_2Ti_9O_{19}$ for Hybrid Sodium-Ion Capacitors with Excellent Rate Capability", **ACS Appl. Mater. Inter.***, 2018, 10,1,437–447.

11. **Swetha S M Bhat**, Diptikanta Swain, Mikhail Feygenson, Joerg C Neuefeind, Abhishek K Mishra, Janardhan L Hodala, Chandrabhas Narayana, Ganapati V Shanbhag, and Nalini G Sundaram *"Bi_4TaO_8Cl Nano-Photocatalyst: Influence of Local, Average, and Band Structure"*, ***Inorg. Chem.***, 2017, 56, 10, 5525–5536.

12. Nalini Ganapathy Sundaram**, Swetha S M Bhat**, Mikhail Feygenson, DiptiKanta Swain, and Abhishek Misra *"Local Structure of Bi_4TaO_8Cl Nanophotocat-alyst by NPSF Analysis*, ***Acta Cryst.***, 2017, A70, C70.

13. *"Photocatalysis of Bi_4NbO_8Cl Hierarchical Nanostructure for Degradation of Dye under Solar/UV Irradiation", **New J. Chem.***, 2015, 39, 3956.

14. **Swetha S M Bhat**, and Nalini G Sundaram *"Controlled Inversion and Surface Disorder in Zinc Ferrite Nanocrystallites and their Effects on Magnetic Properties",* Ranajit Sai, Suresh D. Kulkarni, **Swetha S M Bhat**, Nalini G Sundaram, and S A Shivashankar, ***RSC Adv.***, 2015, 5, 10267.

15. **Swetha S M Bhat**, Ashfia Huq, Diptikant Swain, Chandrabhas Narayana, and Nalini G Sundaram, *"Photoluminescence Tuning of $Na_{1-x}K_xNdW_2O_8$ $(0.0 \leq x \leq 0.7)$ Nanoparticles; Synthesis, Crystal Structure and Raman Study", **Phys. Chem. Chem. Phys.***, 2014, 16, 18772-18780.

16. *"Polymorphism in Photoluminescent $KNdW_2O_8$: Synthesis, Neutron Diffraction, and Raman Study",* **Swetha S M Bhat**, Diptikanta Swain, Mikhail Feygenson, Joerg C Neuefeind, Chandrabhas Narayana, and Nalini G. Sundaram, ***Cryst. Growth Des.*,** 2014, 14, 835-843.

17. **Swetha S M Bhat**, and Nalini G Sundaram *"Efficient Visible Light Photocatalysis of Bi_4TaO_8Cl Nanoparticles Synthesized by Solution Combustion Technique*, ***RSC Adv.***, 2013, 3, 14371.

Conference Papers

Books/Book Chapters: Nil

Patents: **Nil**

R & Grants & Consultancy Projects: Nil

Ongoing & Completed Research Projects: Nil

- **[Project Title]** – Funding Agency: [Name], Duration: [Year-Year], Role: [PI/Co-PI].
- **[Project Title]** – Funding Agency: [Name], Duration: [Year-Year], Role: [PI/Co-PI].

Ongoing & Completed Consultancy Projects: Nil

Professional Memberships

Awards & Recognitions

- [Award Name], [Organization], [Year]
- [Achievement], [Details], [Year]

Student Supervision

- **Undergraduate Research Mentees:** 1

Professional Roles Nil

Teaching

Core Courses: [Current semester]

- CM221IB Chemistry of Functional Materials
- CM211IA Chemistry of Smart Materials and Devices

Advanced/Lab Courses:

- CM221IB Chemistry of Functional Materials
- CM211IA Chemistry of Smart Materials and Devices

- **Professional Roles –**

Responsibilities

- **Academic:** Test Co-Ordinator and Counselor
- **Administrative:** Website coordinator

External Connect –