

Dr. Sanju Rani, Ph.D, Post-doc (USA)
Assistant Professor
Department of Physics, SRMIST
Ramapuram Campus, Chennai



Dr Sanju Rani, Working as an Assistant Professor at Department of Physics, SRMIST Ramapuram campus. She completed PhD in Physics from the Indian Institute of Technology Delhi. Prior to this, she earned bachelor's and master's degrees from DU and JMI University and also holds a bachelor's degree in Education from JMI University Delhi. She worked as a post-doctoral researcher at the Materials Research Institute, Pennsylvania State University, USA. After coming back from USA, she joined as a DST Women scientist in the ARCI-Chennai. She also worked as a Senior Project Officer at the Teaching Learning Centre, IIT Madras and is involved in the development of teaching curriculum, faculty development programs, educational research at IIT Madras. In her research carrier so far, she has published 22 papers in peer reviewed, 2 book chapter and attended 16 national and international conferences including presentations at *Kuala Lumpur, Japan Singapore and Italy*.

Area of Research

Nanomaterial Synthesis, Physics and chemistry of gas solid interaction, Solar Powered CO₂ reduction to value added chemicals, water purification and Hydrogen generational.

Guest Lecture

- 1- CO₂ reduction to useful fuel at *JAIST, JAPAN, 29 June 2015*
- 2- Introduction to nanomaterials and their applications at *SRM IST, Ramapuram campus 11 April 2019.*
- 3- E-Learning at IIT Madras, 24 July 2021
- 4- E-Learning at IIT Madras, 27 July 2021

Student Guidance

1. M.Tech. Nanotechnology project (Ms. Shangumapriya, SRM University, Chennai 2013-14 "structural, optical and photocatalytic and photoelectrochemical properties of TiO₂ and Fe₂O₃-TiO₂)
2. M.Tech. Nanotechnology (Dual Degree) project (Ms. Akansha Ruhela, Amity University, UP 2014-15 " Photoelectrochemical studies of BiVO₄ coated ZnO nanorods"
3. Ph.D student – 1 students Going On

Research Projects (ongoing)

1. Solar-powered CO₂ reduction and nano-plastics degradation through metal vacancy engineered spin-polarized TiO₂ nanotubes, SERB-POWER
2. Surface modification and defect engineering of WO₃ thin films through inert ion irradiation, Beam time at IUAC
- 3.

Honors and Award

- 1- MHRD Fellowship 2004-2009
- 2- DST-WOS-A 2012-2015
- 3- Topic editor to the journal *Frontiers in Chemistry* for the topic "Novel Nanostructures for Energy Harvesting and Storage"
- 4- Guest editor to the journal *Energies* for special issue on "Nanomaterials Related to Energy Applications"

- 5- Certificate of Appreciation from Journal of Material NanoScience for reviewing the manuscripts

Recent Publications (*h* index: 12)

1. **Sanju Rani**, Suganthi K, Somnath C Roy, “Stanene: State of the Art and Future Prospects” *Journal of Electronic Materials* (2023) <https://doi.org/10.1007/s11664-023-10377-y>
2. Suganthi K and **Sanju Rani**, “Investigation of UV photoreactor properties of Zirconium (Zr)-doped Zinc Oxide (ZnO)” *J. Mater. Sci.* **2023** <https://doi.org/10.1557/s43578-023-00932-y>
3. Govinda C Behera, **Sanju Rani**, Nasima Khatun, Somnath C Roy, “WS₂ nanosheets functionalized Fe₂O₃ nanorod arrays as a heterojunction photocatalyst for photoelectrochemical water splitting” *Applied Surface Science Advances* **11**, (2022), 100293. <https://doi.org/10.1016/j.apsadv.2022.100293>
4. Tarek Fawzi , **Sanju Rani**, Somnath C. Roy and Hyeonseok Lee Photocatalytic Carbon dioxide conversion by structurally and materially modified titanium dioxide nanostructures, *Int. J. Mol. Sci.* (2022), 23, 8143. <https://doi.org/10.3390/ijms23158143>
5. Rajagopalan Thiruvengadathan, Swati Dhua, **Sanju Rani**, Cherian Joseph Mathai², Mengjun Bai, Keshab Gangopadhyay, Shubhra Gangopadhyay “Template-free Chemical Deposition of Highly Crystalline ZnO Nanorods Thin Films” *Mater. Adv.*, (2022),3, 5383-5392. <https://doi.org/10.1039/D2MA00046F>
6. Nasima Khatun, **Sanju Rani**, Govinda C Behera, Somnath C Roy, “Gas sensing of partially oxidized Ti₃C₂T_x MXene in an argon atmosphere” *J. Mater. NanoSci.*, (2022), 9(1), 74-78. ISSN: 2394-0867
7. B. Pandey, **Sanju Rani**, Somnath C. Roy, “A scalable approach for functionalization of TiO₂ nanotube arrays with g-C₃N₄ for enhanced photo-electrochemical performance” *Journal of Alloy and Compound*, August (2020). <https://doi.org/10.1016/j.jallcom.2020.155881>

Book Chapters

1. Sanju Rani and Somnath C Roy, “Carbon materials for chemical and gas sensing applications” https://doi.org/10.1063/9780735423114_010
2. Sanju Rani and Somnath C Roy, “Nanotube- and nanowire-based sensors for air quality monitoring” <https://elsevier.aptaacorp.com/AuthorProofBooks/elvrBook.html?id=b26be3acb3>

Memberships: Indian Science Congress Association

Scopus ID: <https://www.scopus.com/authid/detail.uri?authorId=15122351300>