

PERSONAL DETAILS

Name: Dr. Ashish K. Kumawat

Academic Qualifications: M.Sc.(Physics),
Ph.D (Material Science and Engineering)

Email Address: ashishosm0@gmail.com

Present Post: Assistant Professor

Total Teaching Experience: 9 Years (UG-9 years, PG: 5 Years)

My Guide of Ph.D.: Dr. Rashi Nathawat, Manipal University Jaipur



ADVANCED HANDS ON TRAINING

- ☐ Hands-on Training Program on Fabrication & Characterization Facility for Nanotechnology, 22nd to 31st July 2022 at IIT Delhi
- ☐ Hands-on Training Workshop on Fabrication and Characterization of GaN LED, 14th Nov. to 23rd Nov. 2022 at IIT Bombay

PROJECTS

Project Title	Type of Project	Location	Nature of duties	Status
Effect of swift heavy ion (SHI) beam irradiation on structural and optical properties of V ₂ O ₅ .	BTR- 2&3	IUAC Delhi	Experiment and analysis	Completed
Development of Organic-Inorganic [(PANI) _{1-x} – (V ₂ O ₅) _x] hybrid nanocomposite based Gas Sensor	Medium-term project	IIT Bombay	Device fabrication and testing	Ongoing

PUBLICATIONS

Journals	
1	Au ⁺¹² Swift heavy ion irradiation induced nanostructure formation in (Sn _x V _(1-x) 2O ₅), x=0, 0.002, 0.004 ceramics. <u>Ashish K. Kumawat</u> , Himani Jain, Satyapal S. Rathore, Rashi Nathawat, Optical Materials, 171, Page:117725, 2025
2	SHI Irradiation Molecular and Microstructural Changes in (PANI) _{2.5} -(V ₄ O ₇) _{7.5} Due to SHI Irradiation, <u>Ashish K Kumawat</u> , Satyapal S Rathore, Ambuj Mishra, Indra Sulania, Rashi Nathawat, Radiation Physics and Chemistry, Volume 237, Pages 113079, 2025, https://doi.org/10.1016/j.radphyschem.2025.113079
3	Tailoring the Physiochemical Properties of Sn-Doped V ₂ O ₅ Using SHI Irradiation, <u>A. K. Kumawat</u> , K. Kumari, S. S. Rathore, I. Sulania, and Rashi Nathawat, Journal of Electronic Materials, Volume 53, pages 5083–5091, 2024, https://doi:10.1007/s1166402411127-4

4	Structural Transition and Photoluminescence behavior of $(V_2O_5)_{1-x}(Ag_{0.33}V_2O_5)_x$ ($x=0$ to 0.1) Nanocomposites, <u>A. K. Kumawat</u> , S. S. Rathore, S. Singh, and Rashi Nathawat, Results in Chemistry, Volume 5, Pages 100802, 2023, https://doi.org/10.1016/J.RECHEM.2023.100802 .
5	Synergistic Properties of $(Au_2V)_{0.01}(V_2O_5)_{0.99}$ Composite: Synthesis, Characterization, and Ashish kumar Kumawat, Physics
	Enhanced Functionalities, <u>A. K. Kumawat</u> , K. Kumari, B. Tripathi, SS Rathore, and Rashi Nathawat, Nano world, vol. 01, Pages 231–235, 2023, https://doi.org/10.17756/nwj.2023s5-045 .
6	The SHI irradiation induced transition to negative dielectric constant phase in $K_2Bi_4Ti_4WO_{18}$, V. K. Sharma, <u>A. K. Kumawat</u> , Rashi Nathawat et al., Frontiers in Physics, Volume11, Pages 1-8, 2023, doi:10.3389/fphy.2023.1127118 .
7	Effect of Heat Treatment on Band Gap of V_2O_5 , Rashi Nathawat, <u>A. K. Kumawat</u> , S. S. Rathore, A. K. Mukhopadhyay, and K. kabra, Journal of Nano- and Electronic Physics, volume 13, Pages 1030, 2021, doi: 10.21272/jnep.13(1).01030 .
Proceeding	
1	Band gap tuning possibilities in vanadium oxide, <u>A. K. Kumawat</u> , Rashi Nathawat, S. S. Rathore, and A. K. Mukhopadhyay, Materials Today: Proceedings, Volume 43, Part 5, Pages 2939-2943, 2021, doi:10.1016/j.matpr.2021.01.291

RESEARCH AREA / SPECIALIZATION:

Development of nanostructured, metal-modified vanadium oxides and ceramic-based composites for advanced toxic gas sensing applications. Expertise includes hydrothermal synthesis, sol–gel processing, solid-state sintering, and acid hydrolysis for nanomaterial and ceramic fabrication; thin-film deposition techniques such as drop-casting, spin-coating, dipcoating, and lithography; comprehensive structural, morphological, and optical characterization (XRD, FESEM, UV–Vis, FTIR, XPS, PL); and nanofabrication of highperformance gas sensors for hazardous and toxic gas detection.

CONFERENCES PRESENTATIONS

1. 5th International Conference on Recent Advances in Material Science and Computational Techniques (RAMSACT), 18–20 December, 2025, Department of physics, Manipal University Jaipur.
2. 1st The Physics Scholar’s Meet: Exploring Quantum Era, 15th May 2025, Department of physics at Manipal University Jaipur,
3. 1st International Conference on Advances in Sciences (ICAS-2025), Jan. 19-20, 2025, Cluster University of Jammu
4. INUP Users’ Meet 2024, Development of Organic-Inorganic $[(PANI)_{1-x}(V_2O_5)_x]$ hybrid nanocomposite-based Gas Sensor, August 10, 2024, IIT Bombay

5. 2nd International Conference on Recent Advances in Fluid Mechanics and Nanoelectronics (ICRAFMN 2024), July 10-12, 2024, Department of Mathematics and Statistics, Manipal University Jaipur
 6. 3rd International Conference on Recent Advances in Material Science and Computational Techniques (RAMSACT-2023), Sep. 20-21, 2023, Department of Physics, Manipal University Jaipur
 7. The 28th International Conference on Nuclear Tracks and Radiation Measurements (ICNTRM-2023), Nov. 6-10, 2023, Gurugram University, Gurugram, Delhi NCR, India
 8. Royal Society of Chemistry's 2022, March 1-2, 2022, United Kingdom, RSC Poster Twitter Conference
 9. International Conference on "Cutting-edge Research in Material Science and Chemistry (CRMSC-2021), Jan 11-12, 2021, Department of Chemistry, Manipal University Jaipur
 10. International Conference on Nanoscience and Nanotechnology (ICONN-2021), Feb. 1-3, 2021, Department of Physics, SRM institute of science and Technology, Kattankulathur.
 11. International Conference of the International Academy of Physical Sciences on Advances in Applied Physics & Earth Sciences (CONIAPS XXVI 2020), Dec. 18-20, 2020, Department of Physics, Manipal University Jaipur
 12. International Conference on Multifunctional Nanomaterials (ICMN 2020), Dec. 28 - 30, 2020, Department of Physics, Manipal University Jaipur
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SCIENTIFIC AWARD

- Peer Reviewer of Springer Nature

SKILLS & EXPERTISE

Material Synthesis, Characterization, Nanofabrication, Gas Sensor, Battery, Metal Oxides, PCB, LaTeX, HTML ...

SCIENTIFIC SOFTWARES

Arduino, Origin-Pro, Diamond, COMSOL Multiphysics, X'Pert High Schore, LabVIEW (beginner level), XPS CASA, SRIM, MS Office, Clewin, VESTA, Keithley etc.

ACTIVITY

- National Service Scheme (NSS)
- Thespian (Ramayana)
- Blogging (Ashish ek kora kagaz)