



# Pramod Kumar Arya

**iD** : 0000-0002-1977-8002  
Scopus ID: 57213235250  
**VIDWAN** : 616921

**HoD & Associate Professor- Mechanical Engineering**  
**parya@iujaipur.edu.in**

## Profile

Dr. Pramod Kumar Arya stands as a pillar of academic excellence and engineering innovation, with a career dedicated to shaping the next generation of engineers and advancing the frontiers of materials science. As the Head of the Department of Mechanical Engineering, Dr. Arya embodies the synthesis of deep theoretical knowledge, practical application, and a steadfast commitment to professional development. His 28-year journey in teaching and research has established him as a distinguished academician whose influence extends across national and international platforms.

Dr. Arya's academic foundation is robust and well-regarded. He holds a Doctor of Philosophy (Ph.D.) from The ICFAI University, Jaipur, completed in 2017, which underscores his dedication to original research and scholarly contribution. His academic trajectory was built upon a Master of Engineering degree from Jai Narayan Vyas University, Jodhpur, and a foundational Bachelor's qualification from Rajasthan University, Jaipur. This strong educational background provides the bedrock for his expertise in Manufacturing Engineering, a field in which he has not only taught but also significantly contributed through pioneering research. Since September 2011, Dr. Arya has served as an Associate Professor at IcfaiTech (Faculty of Science and Technology) at The ICFAI University, Jaipur, where his leadership and pedagogical skills have been instrumental in shaping the department's curriculum and research culture.

The core of Dr. Arya's academic contribution lies in his extensive research on polymer nanocomposites. His work is characterized by a rigorous, data-driven approach to understanding and improving the properties of these advanced materials. His research portfolio demonstrates a consistent focus on Polyvinyl Chloride (PVC) and Polymethyl methacrylate (PMMA) based nanocomposites, reinforced with nanoparticles like Titanium Dioxide (TiO<sub>2</sub>) and Zinc Oxide (ZnO).

A recurring theme in his research is the sophisticated application of image analysis techniques to characterize material morphology. For instance, his publications in the journal *Micron*—including "Probing morphological aspects of PVC/ZnO nanocomposite through image analysis techniques" (with Vishal Mathur and

Bremananth Ramachandran) and "Image analysis of PVC/TiO<sub>2</sub> nanocomposites SEM micrographs"—showcase his ability to extract quantitative data from qualitative Scanning Electron Microscopy (SEM) images. This approach allows for a precise understanding of particle dispersion, agglomeration, and the overall microstructure of the composites, which are critical factors determining their final mechanical and thermal properties.

His research extends beyond morphological analysis to explore the mechanical and thermomechanical behavior of these materials. The publication "Dynamic mechanical analysis of PVC/TiO<sub>2</sub> nanocomposites" in *Advanced Composites and Hybrid Materials* investigates how the addition of TiO<sub>2</sub> nanoparticles influences the viscoelastic properties of the PVC matrix, a crucial parameter for applications under dynamic loading conditions. Similarly, his work on "Thermo-mechanical performance of PVC/ZnO nanocomposites," published in *Phase Transitions*, delves into the synergistic effect of ZnO nanoparticles on the thermal stability and mechanical strength of the polymer.

Dr. Arya has also contributed to the field of computational modeling in materials science. His publication "Experimental data and development of Weibull distribution model for relative dynamic modulus profile of PMMA/TiO<sub>2</sub> polymer nanocomposites" in the *International Nano Letters* demonstrates his ability to integrate experimental findings with statistical models. The Weibull distribution is a powerful tool for analyzing variability and reliability in material properties, and its application to the dynamic modulus of nanocomposites is a novel and significant contribution. Further, his work in *Materials Today: Proceedings* on the "Analysis of apparent activation energy of shear viscosity of PVC/ZnO nanocomposite" tackles the complex rheological behavior of these materials, providing insights into their processability during manufacturing. The year 2019 saw his publication "Assessment of tensile interphase profile of PVC/TiO<sub>2</sub> polymer nanocomposites" in *Philosophical Magazine Letters*, which is a testament to his continuous and prolific output.

Beyond his research and teaching, Dr. Arya is a committed member of the broader engineering community. His active participation in numerous professional bodies highlights his dedication to the advancement of engineering as a profession. He is a life member of several prestigious organizations, a status that signifies long-term commitment and professional standing.

His memberships include the Institution of Engineers (India) (MIE), a premier body that represents a vast cross-section of the engineering community in India. He is also a life member of the National Institute of Personnel Management, the Indian Congress Association (Kolkata), and the Indian Society for Technical Education (ISTE). These affiliations demonstrate his interest not only in the technical aspects of engineering but also in the management of human resources, the broader academic community, and the pedagogical aspects of technical education.

Furthermore, his membership in the Indian Society for Non-Destructive Testing (ISNT) aligns directly with his research focus on material characterization, as NDT techniques are crucial for evaluating material integrity without causing damage. The additional

context provided highlights his membership in the International Association of Engineers (IAENG) and the Institute of Non-Destructive Testing, expanding his professional network to a global level. This extensive network of professional memberships showcases his commitment to lifelong learning, professional ethics, and the continuous development of engineering education and research at both national and global levels.