



Dr. Manindra Trihotri

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Profile

Dr. Manindra Trihotri is an accomplished academician and researcher with around **25 years of teaching and research experience** in Physics, Engineering Physics, Nanotechnology, Polymer Composites, and Polymer Nanocomposites. He has been associated with **IcfaiTech, The ICFAI University, Jaipur, since August 2019**, where he is involved in teaching, research, student mentoring, academic administration, and institutional activities. His academic career reflects a sustained passion for Physics, teaching, experimental research, and the development of advanced functional materials.

Academic Background and Teaching Philosophy

Physics has been Dr. Trihotri's passion since his school education. He pursued Physics at both undergraduate and postgraduate levels, completing his **B.Sc. in Physics, Chemistry and Mathematics** from Barkatullah University, Bhopal, in 1999 and **M.Sc. in Physics with specialization in Digital Electronics** from the same university in 2001, both with First Class.

After completing his postgraduate studies, he chose teaching as his profession, considering education a continuous process of learning. He believes that an effective teacher should continuously explore, learn, and update knowledge to communicate concepts effectively. His early academic experience at **Government M.G.M. P.G. College, Itarsi**, included teaching B.Sc. Physics and Electronics and developing a graduation-level Physics laboratory.

His interest subsequently expanded to **Engineering Physics and Nanotechnology**. During his association with **Maulana Azad National Institute of Technology (MANIT), Bhopal**, he taught Engineering Physics and M.Tech. Nanotechnology. This experience introduced him to advanced nanomaterials and ultimately shaped his research career in polymer nanocomposites.

Research and Ph.D.

While teaching Nanotechnology, Dr. Trihotri developed a strong interest in **polymer nanocomposites, particularly their electrical properties**. His study of the literature and initial experimental investigations motivated him to undertake doctoral research in this field.

He completed his **Ph.D. in Physics from MANIT, Bhopal**, with the thesis entitled **“Investigations on Electrical Properties of Polymer Nano Composites,”** awarded on 19 October 2015. His doctoral research investigated the electrical properties of thermosetting and thermoplastic polymer nanocomposites incorporating different fillers, with emphasis on enhanced dielectric properties and their potential applications.

During his Ph.D., he also completed advanced coursework in **Research Methodology and Computer Applications, Condensed Matter Physics, Novel Materials, and Ethics and Values**, securing an overall CGPA of 9.00.

Teaching and Academic Experience

Dr. Trihotri has served in government colleges, engineering institutions, and a premier technical institute during his academic career. His teaching experience includes **Physics, Engineering Physics, and Nanotechnology**.

He began his teaching career at Government M.G.M. P.G. College, Itarsi, followed by Narmada P.G. College, Hoshangabad, and Shri Dadaji Institute of Technology & Science, Khandwa. At **MANIT, Bhopal**, he taught B.Tech. Engineering Physics and M.Tech. Nanotechnology and was also associated with the institute as a Research Scholar.

He subsequently served at **Truba Institute of Engineering and Information Technology, Bhopal**, and as **Associate Professor and Head at Lakshmi Narain College of Technology (LNCT), Bhopal**, where he taught Engineering Physics to B.Tech. students.

Since August 2019, he has been associated with **IcfaiTech, The ICFAI University, Jaipur**, teaching Engineering Physics to B.Tech. students and Physics to B.Sc. (Honours) students.

His teaching philosophy emphasizes **conceptual clarity, practical understanding, experimentation, and continuous learning**. He believes that Physics education should integrate theoretical concepts with experiments, engineering applications, emerging technologies, and contemporary research.

Research Interests

His primary research interests are in **polymer composites and polymer nanocomposites**, particularly their electrical, dielectric, thermal, and structural properties. His research covers both thermosetting and thermoplastic polymers and the incorporation of nanofillers under controlled processing and dispersion conditions.

His major research areas include:

- Natural-fibre-reinforced polymer composites.
- Thermoset and thermoplastic polymer nanocomposites.
- Dispersion of **Multi-Walled Carbon Nanotubes (MWCNTs)** and Carbon Black.
- Dielectric properties and electrical conductivity.
- AC conductivity and dissipation factor ($\tan \delta$).
- Temperature- and frequency-dependent electrical properties.
- Activation energy of high-dielectric-constant nanocomposites.
- Thermal characterization using DSC and TGA.
- Structural and morphological characterization using FTIR, SEM and TEM.

A major focus of his research is understanding the relationship between **processing conditions, nanofiller dispersion, polymer–filler interaction, and the resulting electrical and thermal properties** of polymer nanocomposites.

Research Publications and Technical Expertise

Dr. Trihotri has published research papers on **silver-coated sisal fibre–epoxy composites, carbon black–epoxy composites, carbon nanotube-based composites, MWCNT–epoxy nanocomposites, and PVDF/MWCNT composites**. His research has appeared in journals including *Polymer Bulletin*, *Journal of Non-Crystalline Solids*, *Composite Interfaces*, and *Journal of Advanced Dielectrics*. His recent work includes investigations of the dielectric behaviour and AC conductivity of PVDF/MWCNT composites, particularly the role of interfacial polarization and β -phase formation.

He has hands-on expertise in the **fabrication, processing, electrical measurement, and characterization of polymer nanocomposites**. His instrumental experience includes the **Keithley 3300 LCZ meter** and **Wayne Kerr 6500B impedance analyzer**, including measurements over a frequency range of 500 Hz to 100 MHz.

He has experience with **SEM, TEM, FTIR, DSC, and TGA** characterization and uses Origin software for experimental data analysis, plotting dielectric characteristics, and determining activation energy through Arrhenius analysis.

Academic Administration and Professional Contributions

Alongside teaching and research, Dr. Trihotri has contributed significantly to academic administration and institutional development. His responsibilities have included **Co-Convenor of the Examination Planning Committee, Convenor/Vice-President of the ICFAI Innovation and Entrepreneurship Cell, SIMS Coordinator, NAAC Binary Accreditation Attribute 10 In-charge, Internal Member of the Board of Studies, University-level Coordinator, and student mentor**. He has also contributed to admission counselling, institutional branding, Examination Cell activities, and NBA accreditation work.

He has served as a reviewer for journals including the **Journal of Non-Crystalline Solids, Polymer Bulletin, and ACS Sustainable Chemistry & Engineering** and is associated with several professional scientific and academic organizations. He has also served as an editorial board member in the field of Composite Materials.

Current Research Outlook

Dr. Trihotri continues to integrate **teaching and research** with a focus on advanced polymer nanocomposites. His current research interests include controlled nanofiller dispersion, temperature-dependent electrical conductivity, dielectric and AC conductivity, activation-energy analysis, and thermal and structural characterization.

He considers teaching and research to be complementary aspects of an academic career. While teaching provides an opportunity to share scientific knowledge and inspire students, research enables continuous exploration of new scientific questions and advancement of knowledge. With extensive experience in **Physics, Engineering Physics, Nanotechnology, polymer nanocomposites, material characterization, research, and academic administration**, Dr. Manindra Trihotri continues to contribute to teaching, research, student development, and institutional academic activities, with a strong interest in advanced materials and their potential technological applications.