



Dr. Satyavir Singh

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Profile

Dr. Satyavir Singh is an accomplished academician and researcher with expertise in **Physics, Materials Science, thin-film technology, transparent conducting electrodes and Computer Science & Engineering**. His academic career combines teaching, experimental research, academic administration, and continuous professional development. Currently serving as an **Assistant Professor at The ICFAI University, Jaipur**, Dr. Singh has developed a strong research profile in advanced functional materials, ion implantation, transparent conducting oxides, and energy and optoelectronic devices. His academic objectives emphasize academic excellence, quality education in Physics, Computer Science & Engineering and meaningful research contributions.

Dr. Singh's academic foundation is interdisciplinary and robust. He completed his **Ph.D. in Physics (Materials Science – Experimental)** from **Malaviya National Institute of Technology (MNIT), Jaipur**, in 2019 with a CGPA of 8.64/10.00. His doctoral thesis, *"Investigations on Single and Multilayer TiO₂ based Thin Films for use as Transparent Conducting Electrodes,"* established the foundation of his research career in advanced thin-film materials. He also holds a **Master of Engineering in Computer Science & Engineering** from Thapar University, Patiala, completed in 2010 with a CGPA of 8.12/10.00, and an **M.Sc. in Physics** from the University of Rajasthan, Jaipur, completed in 2005. His undergraduate degree is a **B.Sc. in Physics, Mathematics and Electronics**, also from the University of Rajasthan.

His academic achievements include qualification of **GATE in Physics in 2008**, with 95 percentile and an All India Rank of 292, and **CSIR-NET in Physics in 2007**. Professionally, he has been serving as an **Assistant Professor at The ICFAI University, Jaipur, since August 2019**. Prior to this, he held faculty positions at Compucom Institute of Information Technology & Management, Jagannath Gupta Institute of Engineering & Technology, and Baldev Ram Mirdha Institute of Technology, Jaipur. This extensive teaching experience has enabled him to contribute to science and engineering education at both undergraduate and postgraduate levels. Alongside teaching and research, Dr. Singh has undertaken significant academic responsibilities. As **Academic Coordinator**, he has been involved in coordinating various academic activities of the IcfaiTech, while as **Registration In-charge**, he has

been responsible for student registration in accordance with Academic Council norms. These responsibilities reflect his contribution to academic planning, institutional coordination, and effective student administration.

The core of Dr. Singh's research lies in **Materials Science, Transparent Conducting Oxides (TCOs), Ion Implantation, Resistive Switching Random Access Memories (ReRAMs), and Energy Conversion Devices**. His research particularly focuses on the synthesis, modification, characterization, and optimization of functional thin films for transparent conducting electrode and optoelectronic applications. A major component of his work involves multilayer structures such as **TiO₂/Ag/TiO₂, NTO/Ag/NT0, SnO₂/Ag/SnO₂, and GO/Ag/GO**.

A significant contribution of his research has been the investigation of **ion implantation and irradiation effects on transparent conducting multilayer films**. His work on TiO₂/Ag/TiO₂ multilayers has examined the influence of **100 keV Ar⁺ implantation** on their electrical and optical properties, while another study investigated nitrogen ion implantation for improving the performance of TiO₂/Ag/TiO₂ transparent conducting electrodes for optoelectronic applications. Another important research direction is **Nb-doped TiO₂ (NTO)** and its application in transparent conducting electrodes. His research includes investigation of the influence of doping concentration on Nb-doped TiO₂ thin films and the development of **NTO/Ag/NT0 multilayer transparent conducting electrodes for photovoltaic applications**. He has also investigated post-annealing effects in Nb-doped TiO₂ transparent conducting films, demonstrating a continued focus on tailoring material properties for device applications. His research portfolio further includes ion-beam studies of **SnO₂/Ag/SnO₂ and SnO₂/Au/SnO₂ multilayers**, CNT-based transparent conducting electrodes. His publications demonstrate a multidisciplinary approach combining materials synthesis, ion-beam modification, structural analysis, optical studies, electrical characterization, and morphology investigations. Dr. Singh has an established research publication record comprising **15 journal publications and 4 conference publications**. His research has been published in journals including *Silicon*, *Applied Nanoscience*, *Advanced Electronic Materials*, *Materials Science in Semiconductor Processing*, *Solar Energy*, *Materials Research Express*, *Ceramics International*, and *Journal of Materials Science*, among others. His publications cover transparent conducting electrodes, ion implantation, thin-film materials, irradiation effects, nanostructured materials, and functional alloys.

His research has also received international exposure through participation in conferences and academic events. He presented a research paper at the **5th International Conference on Materials Science & Smart Materials (MSSM 2018)** at the **University of the West of Scotland, Paisley Campus, UK**, and has participated in several national and international conferences, workshops, and schools related to materials science, ion-beam technology, nanotechnology, surface engineering, radiation effects, and advanced material characterization.

Dr. Singh possesses extensive experimental expertise in **RF/DC sputtering, electron-beam and thermal evaporation, and spin/dip coating**. His characterization experience includes **X-ray diffraction (XRD), Rutherford Backscattering (RBS), scanning electron microscopy (SEM), atomic force microscopy (AFM), UV-Visible**

spectroscopy, Raman spectroscopy, X-ray photoelectron spectroscopy (XPS), and Hall measurements. He is proficient in scientific software including **Origin, SIMNRA, NanoScope, Gwyddion, CasaXPS, Digital Micrograph, SRIM, and X'Pert HighScore.**

In addition to his core Physics and Materials Science expertise, Dr. Singh has a multidisciplinary technical background in **C, C++, HTML, Core Java, 8051 Microcontroller, operating systems, MS Office, and database technologies.** He has continuously enhanced his professional capabilities through faculty development programmes and workshops in **Outcome-Based Education, Research Methodology and Data Analysis, Power BI, Cybersecurity, Cloud Computing, Artificial Intelligence and Machine Learning, Soft Computing and Data Science, Research Methods and Ethics, Intellectual Property Rights, and research paper writing.**

Overall, Dr. Satyavir Singh's academic career reflects a strong integration of **quality teaching, experimental research, academic leadership, and technological expertise.** His work in transparent conducting oxides, ion implantation, multilayer thin films, and functional materials demonstrates a sustained commitment to advanced materials research and emerging energy and optoelectronic technologies. Through his teaching, research publications, academic coordination, and continuous professional development, he contributes to the advancement of Physics and engineering education while supporting the development of innovative materials and devices.