

## Statement of Purpose

As an undergraduate physics student, I became fascinated with material science, primarily due to its experimental nature. The outstanding laboratories at Aligarh Muslim University further heightened my interest and by the time I finished my undergraduate studies, I wanted to become a material science researcher at one of the best institutes in the world.

I was introduced to nanotechnology as part of my final year project during my M.Sc in physics. While working on a project titled “Tuning Structural, Morphological and Optical Properties of Tricomposite Layer by Layer Deposition of multi walled carbon nanotubes (Mwcnt) and Nanoflowers of  $\text{SiO}_2(1-X)$ ”, I learnt about X-ray diffraction, scanning electron microscope and various characterization techniques. I was fascinated by the novelty of nanotechnology and the scope for discovery and innovation in the field. I decided that I was going to specialize in nanotechnology.

To build a strong foundation for doctoral studies, I enrolled for an M.Tech (my second masters) in nanotechnology at Jamia Millia Islamia. I have worked on “Design and development of Humidity Sensor” in my final year Project. The broad areas of research where I want to contribute include sensors, li-ion batteries, photocatalysis, 2D nanomaterials, organic opto-electronics, nanocomposites, semiconductor devices, nanophotonics, Sensors and carbon nanotubes. My core background in physics with a specialization in laser spectroscopy along with a degree in nanotechnology enables me to bring new insights and perspective to research in these verticals.

The laboratories in IIT Kharagpur and The University of Manchester are equipped with the best tools and cutting-edge equipment. U.K has a culture of chasing excellence, leaving no stone unturned in this quest and it is leading the nanotechnology revolution throughout the world. This is exactly the kind of footing I need to execute to my vision.

IIT Kharagpur and The University of Manchester are by far my first choice for higher education. It does not necessitate mentioning that I can engage in Research & Development (R&D) at a reputable institute after receiving a Ph.D. from the IIT Kharagpur and The University of Manchester because the universities are known for its rigorous concentration on research-intensive learning and practical application. The three standards by which any educational system is evaluated are Access, Equity, and Quality.

My immediate goals are to learn about many aspects and a variety of areas within the field of material science. In addition, I want to narrow down the area of expertise I want to pursue. As a researcher, I believe that the first step is to establish a strong foundation and grasp the fundamentals and the only way to do this is to obtain hands-on experience and practical exposure in world class lab facilities.

My end purpose is to provide education to economically disadvantaged members of society. Therefore, my immediate goal is to obtain a Ph.D. degree from one of the top universities in the world. This will enable me to work in a reputable, global research and development business. Nobody has ever successfully led others with just words; successful leadership always involves taking action

at the correct moment and in the right direction. For this, I am working hard to polish my talents so that they can support my long-term objectives. Every action I take is strategically planned. Since I recently completed my second master's degree, I am excited to begin the most critical part of my career – research.

I come from a country with a vibrant and young population that wants to serve the world. I want to become the much-needed bridge between India and the international academic community at the forefront of progress in nanotechnology. I want to become a beacon that attracts resources, funding and expertise to India from all over the world.

Given my track record of exceptional academic success and my keen interest in your stream of research, I am confident that, if given the chance, I will enjoy working on the topics that most pique my curiosity. I am confident that my interdisciplinary background, in addition to my academic credentials will match your research institute's expectations.