Statement of Purpose

Technology has always been a realm of fascination to me as it involves the application of science for practical purposes. I am Anjali Jayakumar, currently pursuing my M. Tech degree focused in Biotechnology at the prestigious Indian Institute of Technology (IIT) Guwahati.

In 2015, I chose to pursue a B. Tech degree in Biotechnology at the SRM Institute of Science and Technology (SRM IST), Chennai. During my undergraduate days I was able to learn and understand about the different techniques using which biological systems can be utilized to develop or invent various products. Exploring the wealth of microorganisms, unravelling their unique capabilities, utilizing them as cell factories to produce desired materials and further optimizing its production for its commercialization, fueled my inquisitiveness. Therefore, I developed in me a zeal to carry out some research in this area. In my second year of undergraduate study, I started involving myself in the research carried-out at the Bioprocess and Bioseperation Laboratory, SRM IST during my free time and vacations. There I have worked on projects involving the microbial production of value-added products such as biofuels, biosurfactant and biopolymer nanocomposites using non-conventional feedstock.

I submitted my B. Tech final thesis entitled 'Microbial synthesis of poly(3-hyddroxybutyrate) metal nanocomposites by *Bacillus megaterium* utilizing cheese whey permeate' in April 2019 following which I graduated from SRM IST in May 2019 with a B. Tech degree in biotechnology. Due to my sound academic knowledge, I was able to crack the 'Graduate Aptitude Test in Engineering (GATE)-2019' which is a national examination conducted jointly by the Indian Institute of Science and 7 IITs on behalf of National Coordination Board-GATE, Ministry of Education, Govt of India. I secured an All India rank of 128, 98.6 percentile in the biotechnology discipline of GATE-2019. As a result of my excellent performance in GATE I was given an admission for the post-graduate degree program (M. Tech) in biotechnology at IIT Guwahati.

I started my study at IIT Guwahati in July-2019. Academic atmosphere of IIT was intense due to which I was able to gain a clear and deep understanding about various domains of biotechnology. In my first year of the post-graduate program, I studied courses such as advanced genetic engineering, analytical biotechnology, biomaterials, biomolecular and cellular process engineering, quantitative biology and so on. Simultaneously, intrigued by the

application of bioprocess monitoring and control systems in the production of value-added microbial products, I involved myself in the research carried out by Bio Process Analytical Technology (Bio PAT) laboratory at the institute for a short span of 2 months. Since I was doing my coursework at that time, I used to spend only my free-time at the laboratory. Though my hands-on experience in the design and operation of bioprocess monitoring and control systems was very limited, I was able to discern through this experience about the importance of monitoring and control systems in process development.

Currently I am in the final year of my M. Tech degree. I am a graduate research student at the Biochemical Engineering Laboratory, IIT Guwahati. Where, I am working on the adsorptive removal of pollutants from simulated wastewater. This is all about my research experience. I would consider my research exposure to be quite versatile as I have involved myself in a wide variety of research projects at my undergraduate and postgraduate institutes.

I am motivated to apply for this project at your institute as I have always wanted to work on research topics that encouraged reusing of resources and sustainability. A significant part of my prior research activity was also on waste valorization. From my perspective, working on this project for one's doctoral research will be exceedingly meaningful and worthwhile. I believe that my basic proficiency in laboratory work and research methodology will make me a great fit for the position for which I am applying. Moreover, my academic background and research experience are a great match for the project domain. Hence, I am confident that I will be an ideal candidate to work on the given project.

Pursuing a JDP at IIT KGP and University of Manchester will let me gain an international research exposure. This program will enable me to enjoy the world-class research facilities of both the institutes. My long-term career goal is to teach technology to students. I believe that this opportunity will be a stepping-stone to establishing the same. If given a chance, I assure you that I will put on my best efforts to make this project a grand success.