

Statement of Purpose

A PhD in Materials Science and Engineering is a postgraduate degree that prepares professionals to take on emerging topics in energy, nanotechnology, biomaterials, electronic, soft, computational materials science, and advanced materials design and processing. I intend to pursue my PhD in Materials Science and Engineering at the University of XYZ.

Being a Chemical Engineering student throughout my academic life, I have an immense interest in the field of Materials Science and Engineering. As a researcher, this PhD can enhance my skills and make me an expert in the field. The PhD program will add flexibility and adaptability to my career in research.

As a Chemical Engineer, I graduated with a first-class honours degree from the University of XYZ. During my bachelor's I acquired the basic knowledge and the skills I needed to face the challenges of the real world in the area of Chemical Engineering. I also applied my knowledge from my bachelor's program to the research I carried out for its completion.

To fulfil the thesis requirements of my bachelor's program, I chose to do research on the application of several methods to improve the hydrotreating unit for diesel production so it could meet the requirements specified in EURO IV. As per the research I carried out, I identified several strategies for improving the hydrotreating unit, including upgrading the equipment, optimizing the parameters of the process and applying new strategies for control. By applying the strategies I have discovered during my bachelor's thesis, the hydro treating unit can produce fuel that meets the current environmental standards in addition to improving its overall profitability and efficiency.

Then I enrolled in a Master's program in Germany to move further up the ladder in my educational life. In order to navigate the Master's program with ease, I took an 18-month German language course from the popular ABC Institute. I was able to secure a place in the German language program and in the Master's program due to the full scholarship I received based on my high scores. However, the political situation in Sudan in the year 2011 did not allow me to proceed further, as due to the unstable political conditions, I lost the scholarship.

Then, I moved to the UAE due to personal reasons, and here I established my family life as well as embraced motherhood. In the year 2018, I felt encouraged to continue my educational journey, and once again, I enrolled in the Master's in Chemical and Energy Engineering

program in Germany, from HIJ University. The Master's program developed my interest in the fields such as Analysis and Design of Experiments, Process System Engineering, Life Cycle Assessment for Biofuels (LCA) and Computational Fluid Dynamics (CFD).

While I pursued my Master's degree, I also joined the research institute ABC to learn the dynamics of complex technical systems in Magdeburg, Germany. I also researched the deactivation of metal-supported catalysts in the middle of the Methanation reaction as a part of the technology more commonly known as Power-to-Methane technology.

I carried out experimental research by utilizing state-of-the-art equipment. In this experiment, the required data was collected and used to understand and estimate the deactivation phenomena under conditions of a severe reaction. I have also used the following devices in my research work: Fixed Bed-Plug Flow reactor, Gas Chromatography (GC), Inductively Coupled Plasma – Optical Emission Spectroscopy (ICP-OES), (BET) surface area analysis, H₂-Temperature Programmed Reduction (H₂-TPR), X-ray diffraction (XRD) and CHSN analyzer.

Why Choose This Particular Course?

In the Materials Science and Engineering (PhD-MSE) program, I will be able to study different structures of chemical materials and use them to transform them into products. The program will provide me with opportunities to work in industrial or research laboratories and learn how to use specialized design software. Not only this, the PhD program will assist me in developing my problem solving, analytical and communication skills.

Professors of the AUS have made a remarkable impression in carrying out novel research on global environmental sustainability. One such name is that of Professor XYZ, who carried out experimental research that identified date palms as possible sources that can be converted into biofuels and biochar.

My own research interests include but are not limited to Catalysis for Sustainable Energy, Life Cycle Assessment, biofuels Computational Fluid Dynamics, Process System Engineering and Mechanical Process Engineering. I am particularly keen to study Catalysis for Sustainable Energy. I will be able to execute and publish original scientific research in high-ranking journals.

Skills I Want to Enhance During the Course:

Throughout my journey in Chemical Engineering, I have acquired several skills in research, but as I go deeper into the field of research with an aim to build a career in it, I am looking to enhance my research methodology skills. Selecting and implementing the right research methodology, as well as running accurate analyses, are all areas I want to improve. I also intend to improve my practice in computational modelling and data science for accurate prediction of catalysts and materials in the use of sustainable chemical production, energy storage, and pollution reduction.

Why Choose This Particular University?

Students who have had the privilege of working with AUS faculty are leading the fields of science and engineering and bring in knowledge and experience from some of the world's top institutes. AUS empowers students to acquire knowledge via cutting-edge research and creates an ideal environment for learning that gives students the tools they need to succeed in their future careers. In addition, AUS provides opportunities for assistantships for full-time qualified students.

The American University of Sharjah (AUS) is the only university in the UAE that offers American-style liberal arts education to its students in the UAE. As a University that has been serving students for a quarter of a century, AUS has had a lasting impact on the lives of students who want to pursue a solid career in research and education. AUS not only provides an environment conducive to learning but also gives mentorship and scholarship opportunities to its graduates who ace in fields of science, engineering, social sciences, academia and business. For the past eight consecutive years, AUS has ranked as one of the top ten universities among Arab universities. In the year 2021, AUS ranked among the world's top 50 universities that are under the age of 50. In the year 2022, AUS was ranked as one of the top 5 universities that had the highest percentage of international students. It also happens to be the first university in the Gulf countries that has been rated for sustainability by AASHE.

Future Career Goals

After completing my PhD, I will be eligible to apply for jobs as a researcher, analyst, materials scientist, research and development expert and metallurgist. I will have options and opportunities to explore the best ones for my future career. However, my highest interest lies in pursuing a career in research and teaching at a reputable university in Sharjah, UAE.

By completing my PhD in Materials Science and Engineering from the American University of Sharjah, I will be able to build a permanent and long-lasting association with the international academic Chemical and Materials Engineering community. I am looking forward to collaborating with peers from all across the globe as well as the amazing faculty at AUS. I would love to be a part of AUS as a Teaching Assistant or a Research Assistant, along with taking care of lab work.