Department of Chemistry

The Department of chemistry at the University of Zululand has always been in the Faculty of Science and Agriculture since 1988. It consists of 5 permanent academics, including HOD, and an interim research chair. The department of chemistry, since its inception, has been engaged in imparting the highest level and quality of academic education. This department constitutes a 4 member faculty expertise in frontier level of research, the main areas of research being nanotechnology, homogeneous and heterogeneous catalysis, organometallics, organic polymer chemistry, analytical chemistry and environmental chemistry.






Our Values and Missions

We authorize a strong science tradition which offers a basis for critical analysis, quantitative reasoning, and career development in Chemistry. We treasure the multiplicity of theoretical approaches, and ideas that encompass the central science of Chemistry. We value relevant research and development as the primary means to break new grounds and reach new frontiers. We support collaborative efforts through establishment of stakeholders, signing memorandum of understanding (MOU) and working together with other institutions (research councils and universities, locally and abroad). We value the direct mentoring of students by the department via tutors and junior lecturers. We distinguish the rapid development of new technology and value the opportunities it presents for research and education. Our key mission is to generate human resource of unmatchable quality. We provide under graduate and post-graduate programs with the aim of producing chemists with high professional competence in research output.

Instruments within the Department

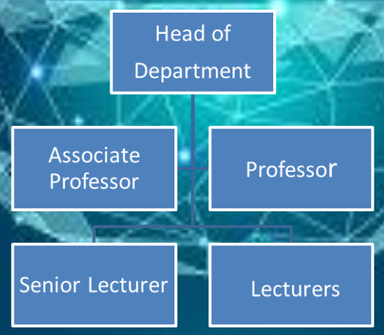
The department is equipped with the latest analysis instruments that are required to carry out modern day research, such as AFM, UV-Vis spectrophotometers, FT-IR, XRD, DSC, TGA, CHNS analyser, GC-MS and MRI




Prof T.E Motaung (HOD) | Dr T.V. Segapelo | Prof V.S.R Pullabhotla | Dr S.E Mavundla | Prof T Govender | Mr. S Mohomane

Our Academic Staff

The composition of the academic staff is shown in the organogram to the right. Currently the department is composed of a lecturer, two senior lecturers, two associate professors and a professor who is also a SARChI chair.



Our Goals

Our goals are to reform our curriculum on a regular basis to bring cutting-edge developments to our students; provide new degree programs to reflect changing needs in our country, to bring advancements in the field of chemistry.

SARChI CHAIR – Prof Neerish Revaprasadu



The SARChI Chair was awarded to the University of Zululand in 2007 on the basis of the research activity in nanomaterials chemistry at Unizulu at the turn of the millennium. There was sufficient activity within a priority area of research in the country. The existing strong collaborative program with the UK meant that there was a critical mass of researchers who could deliver on the mandate of the SARChI Chair program. The Department of Chemistry was well poised to accommodate the Chair to make it a success. The SARChI Chair began with moderate success in the first term. I was only relieved of my teaching and administrative duties at the later part of his first tenure as a Chair after intervention by the NRF. The stability and support of the University allowed me to flourish within the second and third terms. By the third term (last 4yrs) the chair began to establish itself as a major player within the field of functional materials with a focus on energy applications. The expertise and knowledge gained over the first 10yrs manifested in a research program that was focussed, well planned and carefully executed. The Chair at Unizulu has built up tremendous knowledge and expertise in the field of nanomaterials synthesis during the past 20 years. Initially the work focussed on use of molecular precursors for materials synthesis. This work was done during the period 2000-2015. We perfected colloidal synthesis and chemical vapour deposition techniques to prepare high quality materials. Students were trained in various synthetic protocols and characterisation techniques. During the past five years we have shifted focus to the application of our novel materials in the field of energy generation and storage. This is a very exciting and contemporary area of research. There is significant global interest in designing new materials for applications in super capacitors, Li-ion batteries and fuel cells. Photo-catalysis and electro-catalysis applications dominate the area. We have managed to strategically use our materials in these applications with significant success. The limited facilities at Unizulu have meant that we have to work with collaborators who are well versed in the field. This has helped us to explore new ideas within a global context. The results show that the collaborations have added huge value to our research. We regularly publish in the top 10% of chemistry and material science journals. Our aim is to increase our visibility and impact within the field of functional materials. We are the only group in South Africa that prepares a huge range of materials with functionality which are particularly useful in energy applications.

The highlights of the past 13 years include:

1. Close to 200 publications in peer reviewed journals 2. Close to 20 book chapters 3. Supervision of 14 Post-doctoral research fellows 3. 15 Ph.D. and 9 M.Sc. students completed 4. Currently 4 Ph.D. and 6 M.Sc. are due to complete in next two years 5. 2 Patents filed 6. The Chair has given 70 lectures in the form of plenary, keynote and invited talks. 7. Editing of Special Periodic Reports (Vol.4-7) published by the Royal Society of Chemistry 8. Purchase of F200 JEOL HRTEM microscope (R22m) to be commissioned in 2021 9. Collaborations with UK, USA, Ghana, Tanzania, Cameroon, India, Pakistan and Egypt. These were funded by the Royal Society UK and NRF 10. New collaborations with China, Italy and West Indies.