



# ADENIRAN, Omolara Ibukunolowa,

*BSc(Ulbadan), MSc(Ulbadan).....Chemistry*

**THESIS:** Adsorption of Selected Organic and Inorganic Pollutants onto Crystalline Nanocellulose and Graphene Oxide-Based Materials

**CITATION:** The shortage of potable water arising from rapid industrialisation, the increase in the world population and improper disposal of effluents have posed threats to human and animal health. This research aimed to develop safe and economic nanomaterials to remove toxic pollutants from aquatic bodies via adsorption. This study has shown that crystalline nanocellulose and graphene oxide-based nanomaterials are effective for the removal of organic and inorganic pollutants from aqueous solution.

**SUPERVISORS:** Professor SB Jonnalagadda and Professor BS Martincigh

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# AKINTAYO, Damilola Caleb

*BSc(Ulbadan), MSc(Ulbadan).....Chemistry*

**THESIS:** Kinetic and Mechanistic Study of the Ring-Opening Polymerization of  $\epsilon$ -Caprolactone and Lactides Using Zn(II) and Cu(II) Carboxylate Complexes of N-donor Ligands

**CITATION:** Mr. Akintayo's dissertation focused on the synthesis, structural characterization, and catalytic performance of Zn(II) and Cu(II) carboxylate complexes for the ring-opening polymerization of cyclic esters. The thesis clearly shows the influence of the stereo-electronic properties of ligands and coordination geometry on the catalytic activity and polymer properties. The research output has been presented at local and international conferences, and three research articles are currently under review in peer-reviewed international journals

**SUPERVISORS:** Professor BO Owaga and Professor SB Jonnalagadda

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# GOUNDEN, Denisha

*BSc, BSchHons, MSc.....Chemistry*

**THESIS:** Advancements Towards Solid-State Photovoltaic Technologies using Metallophthalocyanines and Cellulose Sources: Synthesis, Characterisation and Solar Efficiency

**CITATION:** .

The candidate developed materials to enhance photovoltaic efficiencies and provide economically viable alternatives for solar cells. Phthalocyanines was used as additive materials to the photoactive layer due to their chemical and thermal stability and the metals used include Co, Ni, Mn and Ti. Nanocellulose was prepared and used as a transparent, conductive, optically transparent substrate. Aspects of this work has already been published in peer-reviewed international journals.

**SUPERVISORS:** Professor WE Van Zyl and Dr N Nombona

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# HAMED, Mohammed Saeid Gebreel

*BSc(USudan), MSc(USudan).....Physics*

**THESIS:** The Effects of Nano-composites in Bulk Heterojunction Thin-film Organic Solar Cells

**CITATION:** Mr Hamed has investigated on the influence of various plasmonic nano-particles on the performance of thin film organic solar cell. Consequently, Mr Hamed has discovered several new experimental results that can improve our understanding on the role of local surface plasmon resonance for efficient solar energy harvesting. Mr. Hamed has published more than eight research articles in highly reputable journals in the field.

**SUPERVISOR:** Professor GT Mola





# IBITOYE, Ayodeji

*BScHons(OAU), MSc(Ulbadan).....Physics*

**THESIS:** Cross-Correlation of the Large-Scale Structure of the Universe

**CITATION:** Dr. Ayodeji Ibitoye's thesis works on the cutting edge observational probe of large-scale structure. He performed a cross-correlation study between the thermal Sunyaev Zel'dovich maps derived from Planck CMB maps with galaxy density field from Infrared survey to probe the galaxy bias and the cross-correlation properties. For his second study, he crosscorrelated the tSZ maps with the Planck ISW map to provide useful constraints on cosmological parameters using well-established cosmological models.

**SUPERVISOR:** Professor Y Ma





# ILORI, Abiola Olawale

*BScHons(OlabisiOnabanjoU), MSc(OlabisiOnabanjoU).....Physics*

**THESIS:** Natural Radioactivity level in Soil, Crops, River Sediments, and selected Aquatic species in South Africa's Oil-producing areas

**CITATION:** Mr. Ilori's Ph.D. study focused on determining radionuclide concentrations in different environmental media. The study findings were unique in that they covered both agricultural and aquatic environments, identifying areas of radiation concern in both sectors. His work resulted in 4 papers in reputable international journals, and all the examiners commented on the importance and relevance of the work and results.

**SUPERVISORS:** Professor N Chetty and Dr O Adeleye





# MUGADZA, Kudzai

*BScHons(UZim), MSc.....Chemistry*

**THESIS:** Tubular Carbon-Based Materials from Ionic Liquids and Cellulose-Containing Biomass for Electrochemical Capacitors

**CITATION:** The ever-increasing need for sustainable and renewable energy resources is a global concern. This study reviewed opportunities associated with renewable biomass from sugarcane bagasse as a carbon source to synthesize innovative nanomaterials from ionic liquids as potential nanomaterials for supercapacitors. The resulting nanosized materials with high surface areas provided better efficiency for supercapacitor electrodes. This research brings us a step closer towards viable and sustainable means for utilising renewable energy.

**SUPERVISORS:** Professor VO Nyamori, Dr PG Ndungu and Professor A Stark

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# NAICKER, Sharlene-Asia

*BSc, BScHons, MSc.....Physics*

**THESIS:** A Computational Study of Corrosive Sulphur on Metal Surfaces

**CITATION:** The failure of transformers is sometimes the reason why we experience power outages apart from load shedding. These failures are mainly attributed to the corrosion of copper/silver windings in transformers by corrosive sulphur. Dr Naicker employed techniques in theoretical physics to understand the interaction mechanism between corrosive sulphur and the windings within the transformer. Her research sheds light on developing remedial processes that could ultimately mitigate the failure of transformers.

**SUPERVISOR:** Dr M Moodley





# NDLELA, Siyabonga Sifiso

*BSc, BScHons, MSc.....Chemistry*

**THESIS:** Faujasite Zeolites Synthesis and Modification of its Physico-Chemical Properties for the Oxidative Activation of n-Octane

**CITATION:** The activation of abundant, low value linear paraffins to valuable products is important. Siyabonga Ndlela's research focuses on the oxidative dehydrogenation of n-octane over new modified zeolitic materials. The application of these catalysts in the oxidative dehydrogenation of n-octane produced promising results, which were published in four high impact journals. His work added valuable insight into zeolite materials and, importantly, he was able to deduce a mechanism for the reactions.

**SUPERVISOR:** Professor HB Friedrich

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# NTOLA, Pinkie

*BSC(DUT), MSC(DUT).....CHEMISTRY*

**THESIS:** Oxidative Dehydrogenation of Paraffins using Metal Oxide Catalysts

**CITATION:** Pinkie Ntola's research explores the oxidative dehydrogenation (ODH) of n-octane over vanadates incorporated into magnesium oxide. She used sophisticated techniques, such as advanced electron microscopy, XANES and Powder X-Ray diffraction, with Rietveld Refinement to characterize the materials. The application of these catalysts in the ODH of n-octane produced promising results, which will surely translate into papers of high impact. Manuscripts to this effect have already been submitted.

**SUPERVISORS:** Professor S Singh, Professor HB Friedrich and Dr AS Mahomed





# OLUWALANA, Abimbola Eniolayan

*BSc(Achievers University), MSc(ULagos)...Chemistry*

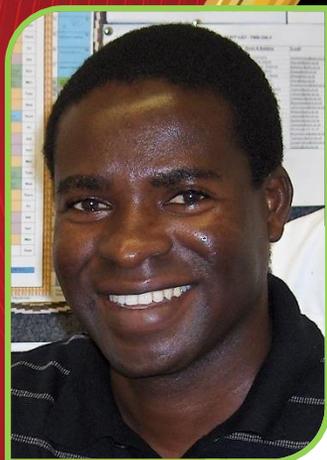
**THESIS:** Synthesis, Structural, Optical and Photocatalytic Studies of Lead Sulphide and Tin Sulphide Nanoparticles from Lead(II) and Tin(II) Dithiocarbamate Complexes

**CITATION:** Abimbola Oluwalana obtained B. Sc (Hons) in Industrial Chemistry from Achievers University Nigeria, and MSc in Inorganic Chemistry cum laude from University of Lagos, Nigeria. Her PhD research focussed on the fabrication of lead sulphide and tin sulphide nanoparticles from dithiocarbamate single source precursors. The nanoparticles showed potential as efficient photocatalysts for the removal of organic dyes from wastewater. She has published six peer-reviewed papers from the thesis

**SUPERVISOR:** Professor PA Ajibade

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# RASALANAVHO, Muvhango

*BSc(UVenda), BScHons(UVenda), MSc.....Chemistry*

**THESIS:** Analytical and Mycochemical Studies on Selected Wild Growing Mushrooms of the *Boletus*, *Russula*, *Lactarius* and *Termitomyces* Families Distributed in KwaZulu-Natal, South Africa

**CITATION:** Muvhango Rasalanavho evaluated the nutritional and medicinal benefits of six species of wild growing mushrooms in South Africa (*Amanita pantherine*, *Boletus edulis*, *Boletus mirabilis*, *Lactarius deliciosus*, *Russula sardonia* and *Termitomyces sagittiformis*). From the mycochemical analysis of the indigenous species, he isolated ergosterol, glycosphingolipid, oleic acid, uracil and mannitol, which demonstrated moderate antioxidant activity. His study provides a scientific basis for the traditional use of wild growing mushrooms in the country.

**SUPERVISORS:** Professor SB Jonnalagadda and Professor R Moodley

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