# Department of Chemistry

## Departmental Seminar Series: Organic Chemistry

**You are cordially invited to a face-to-face lecture presented by**

## Dr Mohammed Balogun

Principal Researcher, Advanced Functional Materials, CSIR, Pretoria.

**Date:** Friday, 7 October 2022
**Time:** 11:30
**Venue:** The Orbital (Room 3-1 Chemistry Building)

# Pharmacologically active and antimicrobial polymers as advanced materials for health

While the COVID-19 pandemic has laid bare the threats posed by infectious diseases, most countries on the African continent live with the burden of infectious diseases like malaria, tuberculosis, HIV/AIDS etc. With basic methods and limited therapeutics to treat and prevent these diseases, the ability to cope with well-known diseases and new pathogens is severely strained. This seminar will share synthetic chemistry-based technology development research of the Functional Polymers (FunPoly) team of the CSIR. Polymers with modifiable functional groups offer a platform to develop advanced polymeric materials with unique therapeutic and antimicrobial properties. This talk aims to describe how chemical modification serves as a gateway between polymer chemistry and advanced materials development. It will focus on FunPoly's research into the synthesis of polymer therapeutics nanomedicines and antimicrobial biopolymers to treat and prevent infectious diseases, respectively. While our research into the synthesis and development of pharmacologically active polymers has focused mainly on therapeutics for infectious diseases, specifically malaria, the antimicrobial polymers are non-therapeutic topically applied materials to alleviate the overreliance on antibiotics. One provides solutions for some of the major pharmacological challenges that plague small-molecule therapeutics while the other introduces alternatives to antibiotics for preventing infections. The talk will highlight how synthetic chemistry R&D can catalyse the confluence of several diverse disciplines, industries, and commercial interests.

**Profile**

Mohammed holds a BSC (Hons) degree in Biochemistry from Olabisi Onabanjo University, Nigeria, and a PhD in Organic Chemistry from the University of Pretoria. He is a principal researcher at the CSIR and PI of the Bio-polymer Modification & Therapeutics Laboratory.

Mohammed is an internationally recognized researcher. He was recently appointed to the College of Experts of the UK-based African Research Excellence Fund (AREF). He currently leads two international research consortia focused on developing antimalarial polymer therapeutics and antimicrobials. In addition to a full publication record, he has filed two international patents on a novel antimalarial nanomedicine and antiviral coating for advanced personal protective equipment. These two inventions are among three technology demonstrators awarded at technology readiness level 6 since 2021 at the CSIR with one being licensed to industry.

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