

Department of Chemistry

Departmental Seminar Series

You are cordially invited to an online lecture on the PhD thesis of



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Date: Monday, 6 December 2021
Time: 14:00
Join with Blackboard: <https://eu.bbcollab.com/guest/4c74c92e89a445659d82b3c450e89864>
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The chemical syntheses and physico-chemical characterization of polymer conjugates of antimalarial compounds

Malaria continues to be a major infectious disease with 229 million cases reported in 2019 of which 94% occurred in the African region. Problems such as poor aqueous solubility, instability, toxicity and drug resistance hamper the efficacy of antimalarial drugs recommended by World Health Organization. Polymer therapeutics is a nanomedicine technology platform that has seen limited application to malaria and other infectious diseases. In this work, chemistry was developed for linking hydrophobic compounds used for the treatment of malaria (betulinic acid, dihydroartemisinin, lumefantrine, and primaquine) to hydrophilic polymers (polyethylene glycol, chitosan, poly(*N*-acryloylmorpholine) macromonomers-co-acrylic acid and polyglutamic acid). Analysis revealed how conjugation to the polymers resulted in polymer therapeutics with physico-chemical properties markedly different from the original drugs. The most clinically significant changes demonstrated were improved solubility and reduced toxicity. By developing synthetic chemical routes to these antimalarial polymer therapeutics with enhanced aqueous solubility, this work opens up the possibility of the development of intravenous triple combination therapies for patients with severe or complicated malaria and for blocking transmission.