



DEPARTMENT OF CHEMISTRY

PhD Studentship Position: Design and synthesis of novel metal-based antimicrobial agents

A four-year PhD position (9,000 EUR p.a., and full annual tuition fees) is available at Maynooth University under the supervision of Dr Denise Rooney (recipient of the 2019 Maynooth University Doctoral Supervision Award) and Professor Frances Heaney, members of the Chemistry Department and the Human Health Institute.

Antimicrobial resistance is a global and growing concern threatening the efficacy of known drugs to combat common diseases caused by bacterial, fungal and viral pathogens. It is an enormous societal problem and human health and economic costs are significant with many infections becoming harder to treat and hospital stays becoming longer. There is an urgent global need for effective new and improved antimicrobial agents.

This exciting project in the area of bioinorganic medicinal chemistry will make and study the antimicrobial activity of a novel series of ligands and their metal complexes. Chelating ligands based around the phenanthroline framework will be targeted. We have already found a robust synthesis to two families of these compounds.¹ In this project you will further develop the synthesis of the ligand families, make and characterise their metal complexes and study the antimicrobial activity of both the free ligands and the metal complexes. Following a structure-activity relationship (SAR) you will identify your lead compounds and further refine them by functionalisation for targeted delivery.

In this modern medicinal chemistry project you will gain expertise in core techniques of synthetic organic and inorganic chemistry. In working with biological collaborators, you will have the possibility of conducting assays to determine the antimicrobial activity of your new compounds. You will have the opportunity to disseminate your results through research papers and by presenting at research meetings and conferences. The project will support your professional development helping prepare you for a future as a highly skilled scientist in an academic or industrial setting.

We are looking for highly motivated candidates with a good honours primary degree with a strong component of Chemistry. Informal enquiries can be made to denise.rooney@mu.ie or frances.heaney@mu.ie

Candidates must have a good standard of written and verbal communication and presentation skills in English. Minimum English language requirements can be found at <https://www.nuim.ie/study-maynooth/postgraduate-studies/courses/msc-chemistry#tabs-entry>

Applicants should provide a CV and full academic transcripts, along with contact information of two academic referees to denise.rooney@mu.ie or frances.heaney@mu.ie.

Closing Date for Applications Friday 24th July 12 noon.

1 Ahmed, Muhib; Rooney, Denise; McCann, Malachy; Casey, Jamie; O'Shea, Katie; Twamley, Brendan; Tuning the reaction pathways of phenanthroline-Schiff bases: routes to novel phenanthroline ligands, *Dalton Transactions* (2019), **48**(40), 15283-15289