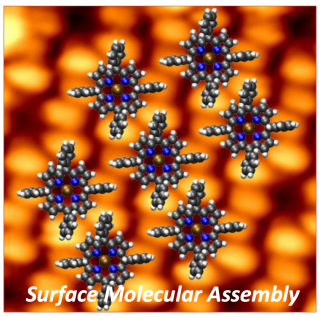
Atomic Force Microscopy of Designer Biomimetic Surfaces and their Interaction with Bacteria



PhD Position Available from Oct 2023

University of Liverpool

Supervisory team:
Professor R Raval, Dept. of Chemistry.
Dr Marco Marcello, Centre for Cell Imaging.

Nature uses sophisticated 2D biomolecular assemblies to control and eradicate microbial cells. A major scientific challenge is to translate these approaches to artificially synthesised systems. This is an opportunity for a 3.5-year PhD position to create and image bio-inspired surfaces and understand the fundamental surface-cell interactions that control the attachment and adhesion of cells to such surfaces.

This project will create precision biomimetic surfaces that will be imaged with Atomic Force Microscopy. The interactions of these precision surface with single microbial cells will then be studied to understand nanoscale aspects of cell-surface interactions, adhesion and cell-cell communication at surfaces. The PhD programme brings together expertise in nanoscale surface assembly of biomolecule, cell-surface interaction probes, cell force microscopy and high resolution imaging in physical and biological sciences.

The PhD student will be based at the Department of Chemistry, University of Liverpool, within the Open Innovation Hub for Antimicrobial Surfaces and the Surface Science Research Centre, equipped with state-of-the-art facilities for precision surface assembly and characterisation. The Centre for Cell Imaging is a world-class resource for all aspects of biological imaging and bio-probing, allowing real-time imaging of biological responses, from single molecules to multicellular structures.

The PhD combines interdisciplinary science and global innovation. The Open Innovation Hub for Antimicrobial Surfaces is at the forefront of translating nanoscale scientific knowledge into innovation and is one of the four core partners of the £23M National Biofilm Innovation Centre (NBIC) (www.biofilms.ac.uk). This project will involve close collaboration with Bruker Ltd on optimising experimental protocols for advanced imaging and cell-surface interactions.

The student will enrol in NBIC's **Doctoral Training Centre** which trains interdisciplinary PhD researchers at the Interface of Physical and Life Sciences to understand the behaviour of microbes at surfaces that are central to the global challenges of Antimicrobial Resistance (AMR), Health, Food Security, Clean Water and Energy.

Eligibility: This position is open to **UK students or a limited quota of EU students only** with the equivalent of at least a 2.1 Honours degree in Biophysics, Chemistry, Physics, Nanotechnology, Bio-Imaging, Materials Science or Engineering. An interview will be undertaken with suitable candidates before an offer is made.

Fees and a stipend for 3.5 years will be paid provided eligibility is met.

How to apply: Applicants should apply by e-mailing Lucy Jones (email: Lucy.Jones2@liverpool.ac.uk).

You should submit an up to date CV and cover letter with names of at least 2 academic referees.
Deadline: 31 May 2023. Candidates will be evaluated as applications are received, and the position may be filled before the deadline if a suitable candidate is identified.