



3-Year PhD Studentship Available

Colloidal particle manipulation in microfluidic devices for healthcare applications

Project Description

UCL Chemistry Department is offering a fully funded studentship to a highly motivated candidate to start in October 2023. The student will carry out his/her doctoral research at UCL.

Synthetic and natural colloidal particles (e.g., metal/plastic nanoparticles, liposomes, exosomes) are ubiquitous in a wide range of chemical, bioanalytical, biomedical and environmental applications. Control over particle motion is an important aspect for many of these applications, especially bio-analysis, drug delivery, diagnostics and environmental monitoring and remediation. In this context, microfluidics is a valuable tool for controlling the motion of colloidal particles and enabling effective strategies for particle filtration, pre-concentration, directed delivery and pre-concentration. Particle-based microfluidic techniques, implemented within portable, low-cost microdevices, can overcome many limitations of traditional laboratory technologies. The aim of this project is to develop and optimise novel microfluidic strategies – based on interfacial transport mechanisms (e.g., diffusiophoresis/osmosis) and optical manipulation techniques – to control the motion and distribution of micro/nano particles within bespoke microfluidic devices. The successful candidate will design and fabricate microfluidic systems and characterise the flow/particle behaviour via optical microscopy methods. He/she will use experimental techniques for the synthesis, characterisation and manipulation of functional particles and undertake proof-of-concept studies to identify prospective applications of the developed “lab-on-a-chip” devices, especially for point-of-care diagnostics. During the project, the candidate will engage in collaborations with other members of the Department as well as with academic and industrial project partners in UK and overseas. Experience in experimental microfluidics and/or microfabrication, colloidal and interface science, optical microscopy are desirable although not a requisite.

Entry requirements:

The applicants should have, or be expecting to achieve, a first or upper second-class Honours degree or equivalent in Chemistry, Physics, Chemical or Mechanical Engineering or a related subject.

Contact details:

Name: Dr Guido Bolognesi

Email address: g.bolognesi@ucl.ac.uk

Start date:

October 2023

Supervisors:

Primary supervisor: Dr Guido Bolognesi (University College London)

Secondary supervisor: Dr Goran Vladislavjevic (Loughborough University)

How to apply

Interested candidates should initially contact the supervisor, Dr Guido Bolognesi, with a degree transcript and a motivation letter expressing interest in these projects. Informal inquiries are encouraged. Please note that a suitable applicant will be required to complete [MS Form](#) entitled Application for Research: degree Chemistry programme. In addition, it is essential that suitable applicants complete an electronic application form at <http://www.ucl.ac.uk/prospective-students/graduate/apply> (please select Research degree: Chemistry programme) prior to the application deadline and advise their referees to submit their references as soon as they possibly can. All shortlisted applicants will be invited for an interview no more than 4 weeks after the application deadline. Any admissions queries should be directed to Dr Jadranka Butorac and Rhianna Betts at doctoral.chem@ucl.ac.uk.

Applications are welcome from UK nationals, EU students with settled/pre-settled status and students with indefinite leave to remain or enter. Please note that the studentship only covers home fees. The updated rules for eligibility for home fees for next year are available at [View Website](#).