CASE EPSRC PhD Studentship - Development of 2D materials for water treatment

Industrial Partner: G2O Water Technologies Ltd.

Supervisors: Professor Martin Tillotson, School of Civil Engineering, University of Leeds & Dr Kangsheng Liu, G2O Water Technologies.

Project Brief Description: Water scarcity is a significant challenge facing society. Advanced methods for water purification, such as ultrafiltration and microfiltration using reverse osmosis, have provided solutions in some parts of the world but have limited application due to high capital and operating costs. New high efficiency membranes with high sieving selectivity offer the potential to reduce both the footprint and operating costs of water treatment, thus enabling a new generation of water treatment technologies with much greater potential, including applications in the developing world. This project will focus on the development of new membranes with low energy cost, improved sieving selectivity, and enhanced efficiency for water treatment with the application of state of the art 2D materials, such as graphene and its derivatives, molybdenum disulphide, boron nitride etc. During the project, membrane preparation methods and properties will be investigated, and a commercially viable method will be developed for membranes to be scaled up towards application level.

About Industrial Partner: G2O is a UK-based graphene innovation and application company whose patented technology is aimed at tackling the world’s water crisis. G2O’s process applies a coating of 2D materials on porous substrates for use in water filtration, making new membranes with advanced properties such as improved water flux and enhanced fouling resistance, and provides new functionality such as selective sieving at low cost. G2O is addressing a wide range of industry issues affecting the use of membranes in water filtration, including the selective sieving of molecules or ions, removal of salts, oil, nuclear waste, dyes, and other chemicals.

Project Aim: to evaluate the potential of new 2D materials as an alternative to advanced filtration membranes in creating a new generation of membranes for water-purification at low cost.

Eligibility: Candidates must have, or expect to obtain by July 2018, a good (First or Upper Second) class Honours degree in an engineering or physical sciences subject. Candidates must be UK or EU citizens, and have been resident in the UK or an EU country for the last 3 years.

To apply: Expressions of interest are sought by Tuesday 2nd January 2018. The successful candidate will be required to complete an application form, provide names and contact details of two referees, and submit a full CV. Please note that your EOI will form part of a subsequent funding application to the University of Leeds.

For informal enquiries please contact Professor Martin Tillotson, Chair in Water Management at m.r.tillotson@leeds.ac.uk or telephone 0113 343 2295.