PhD Studentship
Dr. Gabriele C. Sosso

PhD project: Ice Formation in Soft and Biological Matter
Supervisor: Dr. Gabriele C. Sosso
Funding availability: UK/EU. Funded for 3.5 years (~14.500 £ / year, tax free)
Deadline: 15th December 2017. The starting date (ideally February 2018) can be negotiated

Project description:

The formation of ice in soft and biological matter is of great importance for the food industry (e.g. the freezing of foods) and the biomedical sciences (e.g. the cryopreservation of blood and tissues). And yet, why and how exactly ice forms/percolates on/through e.g. cellular membranes is still largely a mystery. The successful candidate will investigate, by means of molecular simulations (chiefly molecular dynamics and enhanced sampling techniques), the molecular-level details of ice formation on/within a variety of biological substrates/membranes. This highly interdisciplinary PhD Studentship aims to obtain microscopic insight into the mechanism and the kinetics of ice formation in soft and biological matter. This will in turn further our fundamental understanding of the physical chemistry of water freezing. In addition, the successful candidate will be taking advantage of the collaborations with experimental partners, both in Warwick (Prof. Matthew Gibson, Department of Chemistry and Warwick Medical school) and elsewhere (Dr. Heather Knight, Department of Biosciences, Durham University), to complement and guide the computational/theoretical work and maximise the practical impact of this PhD Studentship.

Representative references are: Chem Rev. 116, 7078 (2016) [review article] and J. Phys. Chem. Lett. 7, 2350 (2016) [specific example]. Further information can be found at the DImEnsION Group @ Warwick.

Requirements:

This PhD Studentship is open to British and EU Citizens. Eligible candidates must hold (or be about to receive) an Honours/Masters Degree (at least II.1 or equivalent) in Chemistry, Physics, Materials Science, Biophysics or other relevant disciplines. A strong background in physical chemistry, statistical mechanics, and/or biophysics is desirable. Previous experience with computer programming and molecular simulations is also welcome.

How to apply:

Informal enquires may be made to Dr. Gabriele C. Sosso (G.Sosso@warwick.ac.uk and should ideally include: (i.) a personal statement, outlining the reasons for applying for the Studentship; (ii.) full CV; and (iii.) two references (contact details will suffice, no need for reference letters at this stage). Details on the formal application procedure can be found at http://www.go.warwick.ac.uk/pgapply