A PhD position is available at UNSW Canberra in the area of molecular dynamics simulation of fluid flow and droplet formation in microfluidic channels. The PhD project will examine the fluid flow and droplet formation in a microfluidic channel through the use of molecular dynamics (MD) modelling to provide an insight into the interaction of the fluid properties on the flow behavior and droplet formation, particularly with the shear-thinning polysaccharides frequently used as a blood analogue. The modelling will also provide information for specifying the correct boundary conditions for continuum modelling of these systems, which is computationally less intensive than MD modelling. Of interest is the effect of the channel size on the viscosity of water and how the polysaccharide concentration in the dispersed phase affects the viscosity of the solution. At the critical water/polysaccharide concentration both surface tension and viscosity are dependent on the flow within the microchannels. This project is mostly computational and may involve collaborating with MD modellers from overseas Universities.

The candidate will be expected to have a strong engineering or physical science background. A computational modelling background would be helpful but not essential. The applicant will be expected to have the equivalent of a first-class honours degree from UNSW.

The successful applicant, subject to satisfying the admission requirements, will be awarded a UNSW Canberra Research Training Scholarship with an annual tax-free stipend of $26,392 (2014 rate). This scholarship is for a period of 3 years, subject to satisfactory progress reviews. The successful applicant would be expected to be available to commence their studies no later than Session 1, 2015 and must be on campus and enrolled at UNSW Canberra in the relevant PhD program by 31 March 2015. Applications will be accepted until a suitable candidate is found.

The Canberra campus of the University of New South Wales is located at the Australian Defence Force Academy (ADFA). ADFA is located in an Australian bushland setting less than five kilometres from the city centre and the Canberra airport.

The UNSW Canberra campus has a large and comprehensive library, state-of-the-art computing facilities, well-equipped and modern laboratories.

Canberra is a modern city chosen as Australia’s national capital in 1908. Its name comes from the local Aboriginal word “Kamberra” meaning “meeting place”. As Australia’s capital city, Canberra is the focal point for activities and events that affect and influence the nation. It is the home of Federal Government and the public service, a focus for business and industry, home to the international diplomatic community, a place of study or just a great place to live.

Information on how to apply for admission, fees, scholarships and living in Canberra can be found at: http://www.unsw.adfa.edu.au/student/future/research.html

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