Joint PhD Studentship at University of Southampton Malaysia Campus (USMC) and University of Southampton, UK

Nanocrystalline graphene micro-/nano-machines

Nanocrystalline graphene (NCG) is a new material which is attractive for novel nano-electro-mechanical systems (NEMS) due to its graphene-like mechanical properties. Compared to pristine graphene, where a metal catalyst is required for large scale deposition, NCG can be deposited metal-free using industry-standard semiconductor manufacturing processes. At present, literature relating to the fundamental properties of NCG is limited and it is not possible to design NEMS sensors using NCG without reliable data. Hence, in this project the objectives are to characterise the Young's modulus, Poisson's ratio, piezoresistivity and coefficient of thermal expansion (CTE) for NCG. Using finite element analysis and analytical modelling, microcantilevers, beams and membranes will be designed and subsequently fabricated for characterisation experiments. This work has the potential to generate high-impact research publications and will enhance the research capability of Malaysian researchers. The successful applicant will spend a minimum of 1 year in Southampton, UK and be given hands-on training in semiconductor fabrication methods in a state-of-the-art cleanroom complex. 1 PhD scholarship is available: candidates must be Malaysian, possess at least a bachelor's degree (first class honours) in any engineering field, and be proficient in English (written and spoken). The appointed PhD student will be supervised by world-leading researchers in the field of micromachines. Contact: Assistant Professor (Dr) Pu Suan Hui for more information (suanhui.pu@southampton.ac.uk).

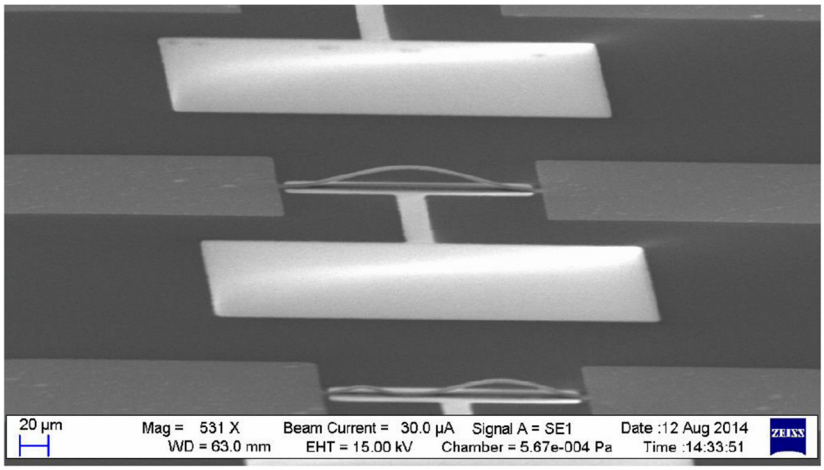

Figure 1: An NCG micro-beam structure