

応用計算力学セミナー

下記のようにセミナーを開催いたします。皆様のご参加をお待ちしています。

日時：2014年6月3日（火）10:45～12:00

会場：創想館2階ディスカッションルーム3

申込：不要

Acoustic Microfluidics : from Chip in a Lab to Lab on a Chip

Abstract: Microfluidics and its many potential applications has been dramatically limited by an inability to effectively propel the fluid and particles and cells within, giving rise to the derisive term “Chip in a Lab” for the discipline. A centuries - old area of research, acoustics, offers a route to genuine Lab on a Chip technology, and in fact has exposed a multitude of phenomena at odds with the classic research literature in acoustics and ultrasonics. During the talk, engineered tools exploiting these new phenomena will be illustrated, including fingernail - sized microdevices to atomize sessile droplets for drug and stem cell inhalation, devices for droplet jetting and manipulation, a device for fluid pumping and particle segregation in closed microfluidics structures, and particle concentration and separation in a sessile droplet. Along the way, the underlying physical phenomena will be explored, with brief discussion of our discoveries including turbulent microfluidics and capillary wave behavior, Fresnel diffraction in fluid manipulation, soliton-like fluid film propagation, and beyond. Some discussion of fabrication techniques, piezoelectric materials, and potential future research areas will close the talk.

James Friend is a Professor and Vice-Chancellor's Senior Research Fellow at RMIT University, and an MCN Senior Tech Fellow at the Melbourne Centre for Nanofabrication, all in Melbourne, Australia.

His current roles include the directorship of the forthcoming \$35 million MicroNano Research Facility at RMIT University, comprising a 1200 sqm cleanroom and biolab facility in downtown Melbourne, five technical staff, and over 50 major nanofabrication and metrology tools; the Vice-Chancellor's Senior Research Fellowship 2012-5, RMIT University; and co-directorship of the MicroNanophysics Research Laboratory, with four academics, three post-doctorates and nine PhD students in a burgeoning group at RMIT. With over 165 peer-reviewed research publications and 25 patents in process or granted, he received excellence in teaching, early career research, and research awards from the Monash Faculty of Engineering in 2006, 2008, and 2011, respectively, a Future Leader award from the Davos Future Summit in 2008, was awarded as a Top 10 emerging scientific leader of Australia by Microsoft and The Australian newspaper in 2009, and is an associate editor of *Biomicrofluidics* and a senior member of the IEEE Nanotechnology for Biology and a pair of Ultrasonics Technical Committees.

