



MESSAGE FROM HEAD OF PILLAR

Dear EPD family,

We had a fulfilling exhibition during the SUTD Open House and we have to thank the various faculty, staff, researchers and students who came down each day to support our booth. We also had another exciting 2D event with our Term 5 students, with Group 11 "Trashy Splashy" emerging as champions after a tight finale. Let us keep this energy going as we sail into our final month in the Spring term. Cheers!

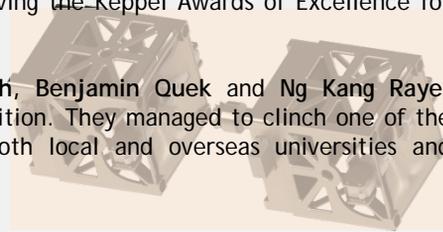


EVENTS

4 Apr	EPD Seminar Series	6 Apr	Node Appreciation Lunch	11 Apr	EPD Seminar Series	18 Apr	EPD Seminar Series	20 Apr	30.007 Exhibition
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ANNOUNCEMENTS

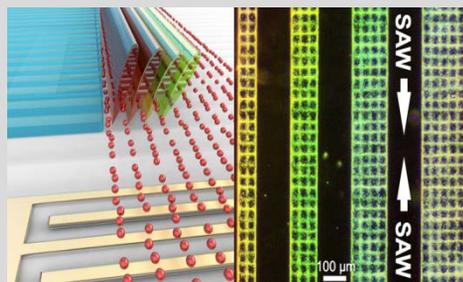
- Associate Professor Yang Hui Ying has been awarded the IPS Nanotechnology Medal 2018 by the Institute of Physics, Singapore (IPS). Congratulations from all of us at EPD!
- EPD would also like to congratulate the following EPD faculty who have been honoured at the SUTD Awards 2017:
 - Assistant Professor Dawn Tan for Excellence in Research
 - Assistant Professor Foong Shaohui for Excellence in University Service
- Congratulations to EPD students Lam Teng Foong and Ng Kang Raye on achieving the Keppel Awards of Excellence for their overall best performance in their Junior year!
- Team SUTD SAT-SPACE, comprising EPD students Samuel Low, Shalv Parekh, Benjamin Quek and Ng Kang Raye, participated in the Singapore Space Challenge, a micro-satellite design competition. They managed to clinch one of the five Merit Prizes despite the fierce competition from other teams from both local and overseas universities and polytechnics. Well done!



FEATURED: SELF-ALIGNED ACOUSTOFLUIDIC PARTICLE FOCUSING AND PATTERNING IN MICROFLUIDIC CHANNELS FROM CHANNEL-BASED ACOUSTIC WAVEGUIDES

By Dr. David J. Collins, Dr. Richard O'Rorke, Dr. Citsabehsan Devendran, PhD student Zhichao Ma, Professor Jongyoon Han, Associate Professor Adrian Neild, and Assistant Professor Ye Ai

While optical waveguides are relatively well developed as an active area of research, acoustic ones at the microscale are not. Properly implemented, acoustic waveguides could find wide application in precise manipulation of microscale objects. In this work, we demonstrate a novel acoustic waveguide where nodal positions are self-aligned to channel features in a microfluidic system. Notably, we show that nodal positions can be produced orthogonally to the wave propagation direction in the vicinity of channel features. This is a significant departure from the bulk of acoustofluidic literature where standing acoustic fields arise from resonance conditions in the fluid or the underlying substrate. Here we can control the number and location of acoustic nodes simply by positioning the channel elements without changing the underlying wave condition. Compared to the existing literature, this method obviates the need for alignment in the case of a substrate wave source and permits particle focusing at the channel walls for negative sorting, exactly opposite the case for conventional half-wave resonating devices. Moreover, we demonstrate the generation of localized 2D patterning with only the imposition of a 1D acoustic wave. This research study was supported by the MOE Academic Research Fund Tier 2 awarded to Ye Ai.



Published in: Collins, D.J., R. O'Rorke, C. Devendran, Z. Ma, J. Han, A. Neild, and Y. Ai, Self-Aligned Acoustofluidic Particle Focusing and Patterning in Microfluidic Channels from Channel-Based Acoustic Waveguides. *Physical Review Letters*, 2018. 120(7): p. 074502.



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