



Talk on “Microfluidic Technology: Theory and how it can transform industrial practice perspective”

by Ir. Prof. Dr. Dominic Foo Chwan Yee

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To most of us living in the age of internet, the invention of inkjet print head represents the most successful application of microfluidic technology.

The talk entitled “Microfluidic Technology: Theory and how it can transform industrial practice” was organised by Chemical Engineering Technical Division (CETD), and was delivered by Associate Professor Dr Chin Jit Kai, University of Nottingham Malaysia Campus.

In the introduction, Dr Chin said since the introduction of microfluidic technology two decades ago, it has attracted attention from researchers around the world because of its unique features of miniaturization, large surface area to volume ratio and etc. The technology allows the reduction of raw material consumption and waste generation in many applications. Dr Chin went on to discuss the principles of laminar flow (to be contrasted with turbulent flow), which is the fundamental of microfluidics. With *Reynolds Number* as low as 1, the flow is predictable but energy intensive and undesirable for effective mixing.

In the final section of the talk, the speaker discussed the advancement of droplet-based microfluidics, in which the presence of liquid-liquid interface enables absolute spatial and temporal control of chemical species is critical in controlling yield and selectivity of chemical products. Using many examples, Dr Chin highlighted the limitations in the technology, such as low production volume, etc. These challenges have to be overcome before the widespread use of the technology. More importantly, from industrial perspective point of view, economic analysis of the technology has to be thoroughly studied.

Note: Slides of the presentation is made available on the Facebook page of CETD – <https://www.facebook.com/CETD.IEM> (260 words)