



# The Institution of Engineers, Malaysia

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## TALK ON PRELIMINARY DESIGN AND OPTIMISATION OF PALM OIL BASED BIOREFINERY

(Organised by the Chemical Engineering Technical Division, IEM)

**Date :** 1 November 2011 ( Tuesday)  
**Time :** 5.30pm to 7.30 pm (Refreshment will be served at 4.30pm)  
**Venue :** TUS Lecture Room, 2nd Floor, Wisma IEM, Petaling Jaya  
**Speaker :** Assist. Prof. Dr. Denny K. S. Ng.

**BEM Approved**  
**CPD/PDP Hours: 2**  
Ref No: IEM11/HQ/282/T

### SYNOPSIS

In a palm oil mill, various types of biomasses (e.g., empty fruit bunches, palm press fiber, palm kernel cake, palm kernel shell, sludge cake, etc.) are generated from the processing of fresh fruit bunches to produce crude palm oil (CPO). In addition, the process consumes large amount of energy (i.e., steam and electricity) and also generates large amount of waste heat together with wastewater, which is known as palm oil mill effluent (POME). Based on the availability of biomasses from a palm oil mill, it is a huge potential to utilise those biomasses to generate sustainable supply of utilities and value-added products, such as biofuel, biochemicals, etc. It is noted that this process consumes a large amount of energy; therefore, it is important to generate energy from the available biomasses in order to be energy self-sustained. Meanwhile, the remaining biomasses are subjected to conversion of value-added products. In this talk, a systematic design and optimisation approach is presented to retrofit a palm oil mill into a sustainable palm oil based biorefinery with consideration of economic and environmental performances.

### BIODATA OF SPEAKER

Dr. Denny Ng is an Assistant Professor at the Department of Chemical and Environmental Engineering, University of Nottingham Malaysia Campus. Before joining the university, he worked as a postdoctoral research associate at the Chemical Engineering Department of Texas A&M University, United State. He obtained his Ph.D. degree from the University of Nottingham, and was the first student who completed a PhD program within two years in the department. His areas of specialisation include resource conservation via process integration techniques (pinch analysis and mathematical optimisation), synthesis and analysis of biomass processing and integrated biorefineries, as well as energy planning for greenhouse gas emission reduction. He has published more than 30 journal papers and made more than 50 presentations in various international and national conferences. He establishes collaboration with well-known international researchers from the United State, the Philippines, Taiwan, etc. throughout his career. He was the recipient of World Federation of Scientists (Malaysia National Scholarship) award in 2007. Apart from focusing on research and development (R&D), Dr. Ng also applied his R&D output in industrial consultation projects, both on resource conservation and integrated biorefinery. Dr. Ng has also been nominated for various excellent awards, e.g., The Prosper.Net-Scopus Young Scientist Award 2011, IChemE Young engineer 2011 award, ACM Doctoral Dissertation Award 2010, EFCE Excellence Award 2010 etc.

Ir. Assoc. Prof. Dr. Abdul Aziz Abdul Raman  
Chairman  
Chemical Engineering Technical Division, IEM

### Announcement to note:

1. Talk is **STRICTLY** for IEM members only (walk in)
2. Limited seats available on a "first come first served" basis. (maximum 110 participants)
3. No telephone and/or fax reservation will be entertained.
4. Latecomers will not be allowed entrance, if the lecture hall is full.
5. Please bring along this flyer and membership card for confirmation of attendance (CPD purpose).

For IEM members, membership cards **MUST** be presented for identification purpose. Members who fail to show their membership card will be charged a fee of RM20.00.

### FUNDS FOR IEM NEW BUILDING

**Kindly be informed that IEM will be charging participants RM10.00 administrative fee to evening talks organized by IEM. The fee would be used for overhead costs, building maintenance expenses as well as to support the purchase of the new building.**

**Students are however exempted. Your understanding is greatly appreciated.**

### CPD HOURS CONFIRMATION

Name of Member: .....

M' ship No: .....

Signature: .....

Date : 1 November 2011