# The Institution of Engineers, Malaysia

**Bangunan Ingenieur, Lots 60/62, Jalan 52/4, Peti Surat 223, 46720 Petaling Jaya, Selangor Darul Ehsan**
**Tel**: 03-79684001/2 **Fax**: 03-79577678 **E-mail**: sec@iem.org.my **IEM Homepage**: http://www.myiem.org.my


## Talk on LIFE THREATENING INCIDENTS OF EXPLOSION FIRE AND IMPACT IN BUILDINGS
## Structural Design to Mitigate a Disaster

Organised by the Civil & Structural Engineering Technical Division, IEM
BEM Approved CPD/PDP Hours: 2 Ref No: IEM12/HQ/066/T

Date : **28 May 2012 (Monday)**
Time : **5.30pm – 7.30 pm** *(Refreshments will be served at 5.00 pm)*
Venue : **Tan Sri Prof Chin Fung Kee Auditorium, 3rd Floor, Wisma IEM**
Speakers: **Professor Bill Wong, Professor Nelson Lam and Dr Tuan Ngo**

**ANNOUNCEMENTS TO NOTE:**

- Talk is **STRICTLY** for IEM members only **(pre-registration and online registration are NOT required)**
- Telephone and/or fax reservation will **NOT** be entertained
- Limited seats available on a "first come first served" basis (maximum 110 participants).
- IEM members are required to produce your membership cards for confirmation of attendance (CPD purpose).
- Latecomers will not be allowed to enter if the lecture hall is full nor be entitled to CPD.

***IEM members who fail to produce their membership cards will be charged a fee of RM20.00.***

**FUNDS FOR IEM BUILDING FUND (WISMA IEM)**

- Kindly be informed that IEM will be charging participants RM10.00 administrative fee for 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.
- All contributions will be deeply appreciated by IEM
- Students are however exempted.
  Your understanding is greatly appreciated.

**CPD HOURS CONFIRMATION**

Name: .....

Membership No: .....

Signature: ……..…….

Date : **28 May 2012**

## SYNOPSIS

Life threatening events of explosion fire and impact of heavy fallen or moving objects in accidents or in incidences of acts of terrorism, crime or social unrest have always been of great concern to our community. Structural engineers who have been entrusted to ensure safety of the building occupants can be held accountable for poor structural performance in these extreme events. However, the amount of advanced technical education that can be obtained from an undergraduate engineering degree program on the related topics is typically limited because of their very specialised nature. This two-day short course aims to introduce key fundamental concepts and up-to-date knowledge, from theory to practice, that are required for the design and assessment of buildings for countering this type of threats.
The short course features:

- Description of the collapse of the twin towers of the *World Trade Centre* and an example demonstrating the temperature evaluation of steel joist beams using a current calculation method.
- Lessons learnt from bombing at *Oklahoma* 1995, bombing of the *Jakarta Australian Embassy* 2004, and other major incidents.
- Lessons learnt from the progressive collapse on the *Seoul Departmental Store*.
- A new approach to blast resistant design and simplified hand calculation method for practising engineers.
- Simplified hand calculation method for analysing the effect of the impact of a heavy fallen, or moving, object on a structural beam, or column.
- Analogy of calculation for seismic, impact and blast actions in a unified framework.

## BIODATA OF SPEAKERS

**Bill Wong** is Associate Professor at Monash University Melbourne. His research aims to provide engineering solutions so as to minimise loss of lives and properties in building fires. Bill's current research explores the reasons for structural collapses, designing steel structures using both elastic and plastic methods, nonlinear structural analysis and its applications to fire resistant structures design. An advocate for the use of plastic method in structural design, Bill has developed simple methods for analysis using both computers and manual techniques. These techniques have now been built into the undergraduate civil engineering syllabus at Monash University. Publishing a book on plastic design was yet another highlight in Bill's teaching career and receiving the 2011 Teaching Excellence in Structural Engineering Award from Engineers Australia was icing on the cake. Using numerous case studies in his teaching methods, Bill explores the Hyatt Regency Walkway collapse in the USA, the progressive collapse of the Seoul Department Store and the footbridge collapse at the Maccabiah Games in Tel Aviv. Last and not least he is an Australian pioneer in the exploration of shape memory alloys for structural fire protection purposes

**Nelson Lam**, Reader in Civil Engineering at The University of Melbourne, is an internationally recognized expert in structural dynamics, earthquake engineering and protective technology. In the past 20 years, he has been researching and consulting widely in this field and has published some 200 technical articles which include some 80 journal articles. His achievement in research and knowledge transfer in this field was recognized by the award of the Chapman Medal (1999), the Warren Medal (2006) by Engineers Australia, Best Paper Award (2004-2007) by the ISET Journal of Earthquake Technology and Chapman Medal (2010). At University of Melbourne, he is co-ordinator of higher degree programs in civil and structural engineering. His early career was with Scott Wilson International as structural engineer in their Hong Kong Office throughout the 1980's and attained British chartered engineer status (MICE, MIStructE) during that period. He was awarded the degree of PhD in structural engineering at the University of Melbourne in 1993, master degree in concrete structures at Imperial College of Science & Technology, London in 1982 and bachelor degree in civil engineering with first class honours at the University of Leeds, England in 1981.

**Tuan Ngo** is senior lecturer at University of Melbourne. He obtained his BScH (Civil Engineering) at the Hanoi University of Civil Engineering, Vietnam, and Master of Engineering Science and PhD at the University of Melbourne, Australia. Ngo has made a significant contribution to research in vulnerability modelling of critical infrastructure, particularly in the area of assessment of the effects of natural and technical hazards on buildings and infrastructure. Dr. Ngo was the Research Program Manager of the ARC Research Network for a Secure Australia and Research Director of the Advanced Protective Technologies for Engineering Structures (APTES) at the University of Melbourne. He is recognised as an expert in protective technologies for protecting critical infrastructure by many government organisations and industry. Ngo received the Safeguarding Australia Award for Best Contribution to National Security Technology Research in 2011. He was the finalist (one in three) of the 2011 DSTO Eureka Prize for Outstanding Science in Support of Defence or National Security. Ngo recent research grants are Critical Infrastructure Vulnerability to Blast Effects, Blast Modelling for Cordon Assessment and Bomb Scene Examination, Research Network for A Secure Australia, Assessment of Façade Systems of high-rise Buildings in Australia under Blast Loading, Innovative concrete panels for resisting severe impulsive loading. Ngo is also a member of The University of Melbourne Energy Institute Energy Efficiency Working Group.

**Ir. David Ng Shiu Yuen**
**Chairman**
**Civil & Structural Engineering Technical Division, IEM**