



Department of Mechanical Engineering
機械工程學系



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學

Seminar

Date: 15 October 2009 (Thursday)

Time: 11:00 am - 12:00 pm

Venue: FJ 303, The Hong Kong Polytechnic University

DIAGNOSTIC/PROGNOSTIC HEALTH MONITORING SYSTEM AND EVALUATION OF A COMPOSITE BRIDGE

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Abstract:

Composite bridges offer many advantages compared to current steel and aluminum bridges including their lightweight and superior corrosion resistance properties. This paper presents the results of a comprehensive on-going research program to develop innovative Diagnostic Prognostic System (DPS) and a structural evaluation of Composite Army Bridge (CAB) system. The DPS is founded on three technologies, namely; optical fiber sensing, remote data transmission, and virtual testing. In developing this system, both laboratory and virtual test were used in evaluating different potential damage scenarios. Health monitoring of a composite beam with DPS entailed comparing live strain data to archived strained data in various bridge locations. For temporary field repairs, a family of composite chords was subjected simple ramp loads in search of ultimate strength. As such, composite bridge specimens showcased their strengths, heralded the viability of virtual testing, highlighted the efficacy of field repair, and confirmed the merits of health monitoring.

Biosketch:

Prof. Mosallam is a registered Structural Professional Engineer and has over thirty years of experience in structural engineering and mechanics with a particular interest in polymer composites, nano technology, advanced health monitoring systems, large-scale testing, and seismic repair and rehabilitation. He is the recipient of numerous prestigious awards including the Outstanding Research Award of the International Conference of Composites Engineering, Best Design Paper Award from the Composite Institute, the Industry Impact Award from Plastics World Magazine, the Modern Plastics Best Paper Award, and the Outstanding Engineering Educator of Year Award from the ASCE/Orange County Chapter, The Distinguished Students Advisor of the Year in State of California from American Society of Civil Engineers and many other awards. During his academic career, he has written and edited seven books on composites for infrastructure and other related topics. He has published over 370 technical papers, chapters, and reports on structural performance of structural systems.

* Refreshment will be served after the seminar.