UNIVERSITY OF MACAU

FACULTY OF SCIENCE AND TECHNOLOGY

DEPARTMENT of

CIVIL AND ENVIRONMENTAL ENGINEERING

Ref: FST/SEM/00057/2017

" Fillers' application in concrete "

by

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Date: **21/07/2017 (FRIDAY)**

Time: **11:00AM – 12:00PM**

Venue: **E11 – 1043**

Abstract

Wet packing density defined as the maximum solid-to-container volume ratio is one of the fundamental concrete properties that governs the performance of fresh and hardened concrete. By increasing the wet packing density, the concrete performance improves in the following ways: (1) The densely packed particles decrease the porosity of concrete such that more loads are carried by the aggregates instead of paste that increases strength; (2) More water trapped in the interstitial void can be free up to increase workability; (3) Less paste is required to fill up the void between aggregates that increases dimensional stability. An effective way to increase the wet packing density of concrete is to broaden the particle size distribution, e.g. blending with fly ash and silica fume. However, these cementitious materials will hydrate with water and form paste, which decrease the dimensional stability of concrete. To this, inert (non-cementitious) fillers are advocated to improve the packing density and performance of concrete. In this seminar, the speaker will introduce the use of limestone and foundry sand to improve the performance of concrete by sharing some test results obtained at University of Queensland. Some recommendations on the use of Nano-material in concrete will be provided. Appropriate use of inert filler(s) can improve the performance of concrete, decrease cement usage and cost, as well as cutting down the greenhouse gas emission.

Biography

Dr. Johnny Ho is a Senior Lecturer in the School of Civil Engineering, The University of Queensland. Before joining the university in 2013, he worked as an Assistant Professor in The University of Hong Kong from 2007-2013. Practically, Dr. Ho worked in both Hong Kong and Brisbane offices of Arup on some large scale infrastructure projects such as The Stonecutters Bridge in Hong Kong and the Ipswich Motorway Upgrade (Wacol to Darra) in Brisbane. Dr. Ho's research interests are on mix design of high-performance concrete with multi-sized fillers, rheology of cement paste and mortar, as well as their application in concrete-filled-steel-tube columns.

ALL ARE WELCOME!