

UNIVERSITY OF MACAU
FACULTY OF SCIENCE AND TECHNOLOGY
DEPARTMENT of
CIVIL AND ENVIRONMENTAL ENGINEERING

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**" Observing grain crushing using 3D X-ray
microfocus computer tomography images "**

by

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Date: 05/12/2016 (MONDAY)

Time: 11:00AM – 12:00PM

Venue: E11 – 1035

Abstract

Breakage in granular material has gained more research attention recently. This grain scale behavior would cause significant change to the macroscopic response. The development of x-ray micro-tomography technique makes it possible to non-destructively examine the microstructure of an assemblage at different stages of loading. In this talk, a 3D micro-focused X-ray CT study will be presented. CT images are used to visualize the development of grain crushing under one-dimensional compression. Initially uniformly graded carbonate grains are prepared into a tailor-made oedometric cell such that X-ray CT scanned images can be taken at different stages (loading and unloading) of the test. State-of-the-art image processing technique has been developed to isolate individual grains from the assemblage. Particulate-scale information including particle size distribution and particle shape characteristics is evaluated from the processed images and the results are compared with other available methods in the literature

Biography

Dr Ryan Yan is currently a Senior Lecturer in the Department of Civil and Environmental Engineering at the University of Auckland. Prior to moving to New Zealand, he had been an Assistant Professor at the University of Hong Kong and University of Macau for totally more than 10 years. His current research interests include constitutive and numerical modeling of geomaterials, grain-scale micromechanics, geotechnical process monitoring, and application of Bayesian inference to geotechnical engineering. Ryan is a chartered member of the Hong Kong Institution of Engineers (Geotechnical). He was the recipient of ICACM Young Investigator Award presented by the International Chinese Association for Computational Mechanics in 2013.

ALL ARE WELCOME!