

CIVIL RESEARCH GROUP SEMINAR

Thursday 23 Feb 2017, 12.00 pm

Room A401

Multi-scale Characterisation and Modelling of Concrete and Fibre Reinforced Composites

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ABSTRACT

Quasi-brittle composite materials such as concrete and fibre reinforced polymers (FRP) / concrete (FRC) have highly heterogeneous, nonlinear mechanical properties due to the random distribution of multiple phases at micro/meso-scales, which in turn determine the performance and reliability of structures at the macro-scale. In this talk, we will review our recent efforts towards high-resolution characterisation of damage and fracture in concrete, FRP and FRC using the in-situ micro X-ray computed tomography (XCT) technique, and XCT-image based 3D mesoscale finite element modelling and direct validation of complex nonlinear fracture. Both damage plasticity models and discrete crack models will be presented, with associated challenges discussed.

ABOUT THE SPEAKER

Professor Yang has 20 years of teaching and research experience in a few UK and overseas universities. His research is aimed at getting a better understanding of how construction materials and structures respond to loadings across multiple scales by a combination of experimental and computational methods in a view to optimise their performances in terms of structural integrity, reliability and sustainability. He has secured over £1m research grants as PI from EPSRC, Royal Society and US Air Force etc since 2007 and published over 130 peer-reviewed papers, including 70 SCI-indexed journal papers (cited 1700+ times with H index=24 in Goggle Scholar). He has received a few awards such as Young Investigator Awards from ICACM and APACM respectively, Humboldt Research Fellowship for Experienced Researchers, PE Publishing Award from IMechE, and Best Paper Award from UK-ACME etc. He has served on scientific/advisory committees of over 30 international conferences and delivered many keynote/plenary lectures. He is a member of EPSRC Peer Review College and a chartered member of IStructE.

This seminar is open to all. For more information, contact Dr Xueyu Geng by email at xueyu.geng@warwick.ac.uk