ARC Discovery 2015 DP150102354 Scholarship

Two PhD scholarships are available at the School of Civil Engineering (The University of Queensland) following the success of the ARC Discovery 2015 DP150102354 entitled “Fire performance of concrete using novel fire testing” by Vinh Dao, Jose Torero, Johnny Ho, Liza O’Moore & Luke Bisby.

Project Summary
The outbreak of fire in buildings and civil engineering structures can have disastrous consequences, including severe structural damage, total loss of contents, and loss of life. Adequate design for fire is thus an important and essential requirement in the design process.

Being the most commonly used construction material, concrete has favourable inherent characteristics with respect to fire. However, upon heating, concrete experiences degradation of mechanical properties and spalling – which may seriously compromise the performance of concrete structures in fire.

Despite extensive research in the past decades, our current knowledge of fundamental properties of concrete at elevated temperatures remains largely based on data from conventional tests in which the thermal loading experienced by concrete specimens is very difficult to be consistently controlled. As a result, the effect of temperature gradients within concrete on its fire performance has not been adequately investigated. Accordingly, the influence of critical processes linked with temperature gradients, including thermal stresses, moisture transport, and pore pressures, has not been properly addressed. This knowledge gap is critical due to the likely significant temperature gradients within concrete in fires.

This research project, through addressing major shortcomings of current “standardized” tests for concrete in fire, aims to fill the above-mentioned knowledge gap, and thereby supports the further transition to performance-based fire engineering. The research will involve a combined analytical/experimental/numerical approach at both material and structural levels.

Eligibility criteria
The successful candidate should:
- have a strong background in structural engineering and concrete/concrete structures. Candidates with structural fire engineering background are strongly encouraged to apply;
- be highly motivated;
- have excellent verbal and written communication skills in English;
- have first class honours degree or equivalent.

Value
Successful candidate will receive a stipend of $25,406 per annum which will be indexed for the duration of the award. This scholarship will be for three years with a possible extension of up to six months.

How to apply
Interested individuals should submit an expression of interest including the following in a single pdf to Dr Vinh Dao (v.dao@uq.edu.au):
- curriculum vitae (including lists of publications and 3 referees with contact details);
- brief statement about research interests and experience (1-2 pages);
- academic transcripts (undergraduate/postgraduate, with English translations if required);
- evidence of English proficiency;