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From Materials to Structures: Advancement through Innovation

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Preface

The organisers of the 22nd Australasian Conference on the Mechanics of Structures and Materials (ACMSM22) extend a warm welcome to all participants whose presence and contributions will no doubt be a key factor for the success of this conference. This conference is hosted jointly by the Centre for Built Infrastructure Research at the University of Technology Sydney (UTS) and the Centre for Infrastructure Engineering & Safety at the University of New South Wales (UNSW). The theme for the 2012 ACMSM conference is *Materials to Structures: Advancement through Innovation.* The first Australasian conference on mechanics of structures and materials began at the University of New South Wales in 1967 as an initiative of the late Prof F.S. Shaw. Subsequently, these conferences have been held biennially as a forum for exchanging the latest research in the field of mechanics of structures and materials by researchers in the Australasian region and beyond. The last conference, ACMSM21, was held at Victoria University in Melbourne in December 2010.

Over the forty five year span and twenty one conventions of the ACMSM conferences, there has been continuous research growth in the understanding of infrastructure and the emergence of new and green materials has added more impetus and relevance to these conferences. The ACMSM has become a biennial forum for academics, researchers and practising structural and construction engineers, as well as materials scientists in the region, fostering the exchange of ideas and detailing the research challenges in infrastructure development in our region.

The peer reviewed papers contained in these proceedings were accepted for presentation at ACMSM22, held at the Aerial Function Centre, University of Technology, Sydney, Australia from 11–14 December 2012. The almost 200 papers were authored by academics, researchers and practising engineers from many countries around the world and cover a broad range of structural engineering and materials research under the following topics:

- Biomechanics
- Composite structures and materials
- Computational mechanics
- Concrete, masonry, steel and timber structures
- Earthquake engineering and structural dynamics
- Fire engineering
- Foundation engineering
- Geomechanics
- Innovative and smart structures
- Pavement engineering
- Rehabilitation of structures
- Rock engineering
- Site investigation
- Soil improvement and reinforcement
- Structural health monitoring
- Structural optimisation
- Sustainable materials

The abstracts submitted were initially reviewed by the organising committee and authors of those abstracts that fell within the scope of the conference were asked to submit full papers for peer review. All the papers included in these proceedings were subjected to rigorous review by the experts in relevant fields. This peer review process resulted in many papers being improved and some papers being rejected. The editors would like to acknowledge the contributions made to the conference by the Scientific Committee who undertook the task of reviewing all the submitted papers.

The editors would also like to thank all the keynote speakers, authors, participants and members of the local organising committee especially Dr. David Kellermann, Dr. Michael Man and Dr. Ean Tat Ooi, for their effort and support for this conference.

On behalf of the ACMSM22 Organising Committee, we welcome you to exciting Sydney and hope that you find the conference inspiring and enjoyable.

Bijan Samali
Mario Attard
Chongmin Song
September 2012

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