Preface

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Realising the importance of SHM, a group of researchers in Australia joined and established the Australian Network of Structural Health Monitoring (ANSHM) on 30 June 2009. The objectives of ANSHM are to promote and advance the field of Structural Health Monitoring in Australia on behalf of its members, and specifically:

- (a) To coordinate and integrate efforts for better development and application of SHM techniques in Australia;
- (b) To showcase achievements, exchange ideas and disseminate knowledge nationally and internationally;
- (c) To promote and facilitate national and international collaborative research and development; and
- (d) To raise general community awareness on the need for and value of SHM research and application.

ANSHM has grown dramatically since its establishment. The members are mainly individuals or groups of individuals of Australian academic institutions, universities, industrial or research organisations with a serious interest in SHM. Till March 2013, it has attracted members from more than 20 organisations, including the ARRB Group, CSIRO, Deakin University, Griffith University, James Cook University, Monash University, NICTA, Queensland Department of Transport and Main Roads, Queensland University of Technology, Road and Maritime Services of the Australian state of New South Wales, Rockfield

Technologies, the University of Adelaide, the University of Melbourne, the University of New England, the University of New South Wales, the University of Newcastle, the University of Technology Sydney, the University of Western Sydney, the University of Western Australia, the University of Wollongong and VicRoads.

As the *Journal of Civil Structural Health Monitoring* is an important platform for the SHM researchers to exchange their ideas and developments in the field, we organise this special issue and invite our members to submit paper relating to SHM. After a rigorous peer-review and revision process, seven papers are accepted and to be included in this special issue.

The seven papers appearing in this special issue address a wealth of topics relevant to structural health monitoring. It aims to showcase the Australian research in this area. It discusses vibration-based damage detection methods applying to truss bridges using genetic algorithms and to slab-on-girder bridges using laboratory studies, the uses of embedded piezoelectric actuators/sensors to detect delamination between steel bars and concrete, the determination of embedment depth of timber poles and piles using guided waves, typical deterministic and stochastic bridge deterioration modelling, a practical and accurate system to rate a network of railway bridges taking into account the effects of damaged structural components, and fatigue tests of thin CHS-SHS T-joints under cyclic in-plane bending. The fruits of Australian researchers' efforts, these results and achievements make a seminal contribution to the worldwide advances in the field of structural health monitoring.

As the guest editors of this special issue, we would like to thank the authors who willingly submitted their high-quality work to realise this special issue. Likewise, the great help of the reviewers is also appreciated, and their careful observations, valuable comments and suggestions

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contributed significantly to improve the content of this special issue. Finally, we would like to express our sincere gratitude to Prof. Aftab Mufti, the Editor-in-Chief of the *Journal of Civil Structural Health Monitoring* for his encouragement, which was indispensable in putting

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