

## Workshop Website

[www.materialsaustralia.com.au/SHM2012](http://www.materialsaustralia.com.au/SHM2012)

The website will be updated regularly to provide the latest information about the workshop.

### Organising Committee

#### Workshop Chairmen

S.C. Galea (DSTO, Australia)

W.K. Chiu (Monash University, Australia)

A. Mita (Keio University, Japan)

#### Local Organising Committee

C. Davies (DSTO, Australia)

J. Kodikara (Monash University, Australia)

S. Moss (DSTO, Australia)

N. Rajic (DSTO, Australia)

C. Rosalie (DSTO, Australia)

M. Veidt (University of Queensland, Australia)

L. Ye (University of Sydney, Australia)

#### International Organising Committee

D. Adams (Purdue University, USA)

P. Banerji (Indian Institute of Technology, Bombay, India)

C. Boller (Fraunhofer Institut für zerstörungsfreie Prüfverfahren (IZFP), Germany)

F.K. Chang (Stanford University, USA)

M. Derriso (USAF, AFRL, USA)

C. Farrar (Los Alamos Dynamics, USA)

M. Friswell (Swansea University, UK)

C.P. Fritzen (University of Siegen, Germany)

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C.G. Koh (National University of Singapore, Singapore)

A. Mal (University of California, Los Angeles, USA)

N. Takeda (University of Tokyo, Japan)

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B. Prosser (NASA Langley Research Center, USA)

L. Richards (NASA Dryden Flight Research Center, USA)

H. Sohn (KAIST, Korea)

H. Speckmann (Airbus Operations GmbH, Germany)

D. Stargel (USAF, AFOSR, USA)

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M. Todd (University of California, San Diego, USA)

#### Secretariat

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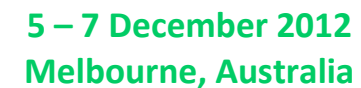
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Call for Papers



4<sup>th</sup> Asia-Pacific Workshop on  
Structural Health Monitoring



5 – 7 December 2012  
Melbourne, Australia

## Invitation

This is the fourth in a series of biennial Asia-Pacific workshop that focus on the field of Structural Health Monitoring (SHM). This is a particularly promising area that has attracted significant attention in recent years for its wide potential applications, particularly for civil infrastructures, and maritime and aircraft structures. The purpose of the workshop is to allow a forum where key and emerging technical issues that are critical and unique in structural health monitoring can be discussed and identified, as well as allow current state-of-the-art technologies and R&D activities in the field to be presented. The workshop is also intended to promote exchanges and cross-fertilisation among many disciplines.

## Technical Focus

The workshop shall focus on, but not limited to, the following topics:

- Sensor and actuator development
- Reliability of structural health monitoring methodologies
- Bio-inspired sensors
- Damage identification and properties/integrity characterisation and assessment
- Intelligent processing of materials and structures
- System integration
- Applications (particularly in the field of aircraft, automotive, rail and maritime structures, civil and petroleum infrastructures etc)

## Who Should Attend

This workshop is recommended to researchers and academics with interests in structural health monitoring and associated research. From past workshops, industrial practitioners have gained from attending these workshops

## Abstract Submission

An abstract of 300-400 word is requested, outlining the content and conclusions should be emailed to the workshop secretariat:

imea@materialsaustralia.com.au

or register your interest and abstract on-line at:

[www.materialsaustralia.com.au/SHM2012](http://www.materialsaustralia.com.au/SHM2012)

## Sponsorship and Exhibition

There will be an exhibition held in conjunction with the workshop. Enquiries about booking/securing booths and sponsorship should be addressed to Materials Australia

## Key Dates

Abstract submission	<b>2 March 2012</b>
Abstract acceptance	<b>9 April 2012</b>
Papers due	<b>10 August 2012</b>
Draft program	<b>3 September 2012</b>

## About Melbourne

Melbourne is an exciting place for visitors. Modern architecture and design is juxtaposed with heritage buildings reflecting Australia's unique cultural history. Melbourne is a lively, sophisticated city packed with shops, restaurants, bars and cafes in wide, leafy boulevards and tiny, atmospheric laneways that beck to be explored. Within an hour's drive of the city, visitors can enjoy some of Australia's most spectacular coastlines, wildlife reserves, wineries, temperature rainforests, surf beaches and historic townships

# Call for Papers

On behalf of the Organising Committee of the 4th Asia-Pacific Workshop on Structural Health Monitoring, we wish to invite you to submit a paper and present your work in this Workshop. This workshop will be held in Melbourne from 5-7 December 2012.

Papers submitted to this workshop will be subjected to peer review. We are planning to publish the acceptance papers in a journal indexed by Elsevier: SCOPUS [www.scopus.com](http://www.scopus.com), EiCompendex (CPX) [www.ei.org/](http://www.ei.org/), Cambridge Scientific Abstracts (CSA) [www.csa.com](http://www.csa.com), Chemical Abstracts (CA) [www.cas.org](http://www.cas.org), Google and Google Scholar [www.google.com](http://www.google.com), ISI (ISTP, ISI (ISTP, CPCI, Web of Science) [www.isinet.com](http://www.isinet.com) and the institution of Electrical Engineers (IEE) [www.iee.org](http://www.iee.org)

# 4th Asia-Pacific Workshop on Structural Health Monitoring, 5<sup>th</sup> to 7<sup>th</sup> December 2012, Melbourne, Australia.

Day 1: Wednesday 5th December				Day 2: Thursday 6th December				Day 3: Friday 7th December										
8:00	8:30	Paper ID	Registration	7:30	8:00	Paper ID	Registration	7:30	8:00	Paper ID	Registration							
8:30	8:45		Conference Opening															
Chair: W.k. Chiu (Monash University)				Chair: Nobuo Takeda (University of Tokyo)				Chair: Richard Chester (DSTO)										
8:45	9:45	Keynote (SHM47)	<b>EMBRAER Perspectives on the Challenges for the Introduction of Scheduled SHM (S-SHM) applications into Commercial Aviation Maintenance Programs</b> <i>Luis Gustavo dos Santos (EMBRAER, S.A., Brazil)</i>	8:00	9:00	Keynote (SHM83)	<b>Fiber-Optic-Based Structural Health Monitoring for Aerospace Vehicle Applications</b> <i>Lance Richards (NASA Dryden, USA)</i>	8:00	9:00	Keynote (SHM84)	<b>Drivers, enablers and barriers for implementing SHM in aerospace applications</b> <i>Peter Foote (Cranfield University, UK)</i>							
Session Theme		1.1 SHM Demonstrators	Paper ID	2.1 Acoustic Emission	Session Theme		3.1 Wireless Approaches	Paper ID	4.1 Acousto-Ultrasonics	Session Theme		5.1 Energy Harvesting for SHM	Paper ID	6.1 Infrastructure				
Chair		Martin Vietdt		Ivan Cole	Chair		Aikira Mita		Luis Gustavo dos Santos	Chair		Scott Moss		Jonathan D'Cruz				
9:45	10:15	SHM45	Flight Tests Performed by EMBRAER with SHM Systems, <i>Ricardo Pinheiro Rulli, Fernando Dotta, Paulo Anchieta da Silva</i>	SHM10	<b>Modal Acoustic Emission Investigation for Progressive Failure Monitoring in Thin Composite Plates under Tensile Test</b> , <i>MohdHafizi Hafizi, J.Epaarachchi, K.T.Lau</i>	9:00	9:30	SHM14	In-situ Blade Deflection Monitoring of a Wind Turbine using a Wireless Laser Displacement Sensor Device within the Tower, <i>Jung-Ryul Lee, Paritosh Giri and Hyeong-Cheol Kim</i>	SHM76	Development and Validation Roadmap for In Situ Structural Health Monitoring of ADF Aircraft, <i>Steve Galea and Nik Rajic</i>		9:00	9:30	SHM69	Optimal Coil Transducer Geometry for an Electromagnetic Nonlinear Vibration Energy Harvester, <i>Luke Vandewater, Scott Moss, and Steve Galea</i>	SHM1	A One Stage Damage Detection Technique using Spectral Density Analysis and Parallel Genetic Algorithms, <i>Maryam M. Varmazyar, N. Harito, M. Kirle and T. Peterson</i>
10:15	10:45	SHM40	Structural Health Monitoring of Space Vehicle Thermal Protection Systems, <i>N. Hoschke, D. C. Price, D. A. Scott and W. L. Richards</i>	SHM31	Experimental Investigation into the Damage Characterisation in Carbon Fibre Reinforced Composite Plates Using Acoustic Emission, <i>Bizuayehu Y Mohammed, Chee K. Tan, Steven J. Wilcox, Alex Z. S. Chong</i>	9:30	10:00	SHM35	Displacement Estimation from Acceleration Measurements using a Wireless Smart Sensor, <i>Jong-Woong Park, Sung-Han Sim, Hyung-Jo Jungand, Bill F. Spencer, Jr.</i>	SHM17	Guided Waves for Aircraft Panel Monitoring, <i>Pawel Malinowski, Tomasz Wandowski, Wieslaw Ostachowicz</i>		9:30	10:00	SHM67	Multiphysics Modelling and Experimental Validation of a Bi-Axial Magnetolectric Vibration Energy Harvester, <i>Josh McLeod and Scott Moss</i>	SHM16	Strain as Damage Indicator for Truss and Frame Structures, <i>S. Opoka, L. Murawski, T. Wandowski, P. Malinowski, W. Ostachowicz</i>
10:45	11:15	BREAK		BREAK		BREAK		BREAK		BREAK		BREAK		BREAK				
Session Theme		1.2 Thermographic Techniques		2.2 Infrastructure	Session Theme		3.2 Corrosion SHM		4.2 Acousto-Ultrasonics	Session Theme		5.2 Acousto-Ultrasonics		6.2 Infrastructure and Medical				
Chair		Ignacio Perez		Alfredo Guemes	Chair		Lance Richards		Victor Giurgiutiu	Chair		Don Price		Alan Wilson				
11:15	11:45	SHM72	Thermoelastic Stress Analysis - Emerging Opportunities in Structural Health Monitoring, <i>Nik Rajic, Steve Galea and David Rowlands</i>	SHM7	Modeling of Environmental Effects for Vibration-based SHM using Recursive Stochastic Subspace Identification Analysis, <i>Chin-Hsiung Loh and Ming-Che Chen</i>	10:30	11:00	SHM65	Acoustic Emission for Tank Bottom Monitoring, <i>Gary Martin</i>	SHM15	Guided wavefield images filtering for damage localization, <i>Wieslaw Ostachowicz, Pawel Kudela, Maciej Radzienski</i>		10:30	11:00	SHM33	Lamb wave Time Reversal For Damage Detection in Composite Laminates Using Single Transducer Pair, <i>Benjamin Normandin and Martin Veidt</i>	SHM5	A Framework for Reliability Assessment of an In-Service Bridge using Structural Health Monitoring Data, <i>Xinghua Chen and Piotr Omenzetter</i>
11:45	12:15	SHM54	Investigation of the Effectiveness of Different Thermographic Testing Modalities in Damage Detection, <i>Tadeusz Uhl, Lukasz Pieczonka, Mariusz Szwedo</i>	SHM20	Structural Damage Estimation using Dynamic Data and Multi-Objective Optimization, <i>Faisal Shabbir &amp; Piotr Omenzetter</i>	11:00	11:30	SHM74	Optical Fibre Distributed Corrosion Sensing - Architecture and Characterization, <i>Roman Kostecki, Heike Ebendorff-Heidepriem, Stephen Warren-Smith, Claire Davis, Grant McAdam and Tanya Monro</i>	SHM78	In situ Modal Filtering for SHM Using a Fibre Bragg Grating Array, <i>Cédric Rosalie, Nik Rajic, Patrick Norman and Claire Davis</i>		11:00	11:30	SHM37	Imaging Damage using Mixed Passive and Active Sensors, <i>Chun H. Wang and L. R. Francis Rose</i>	SHM25	Structural Design and Verification of Composite Pressure Vessels for Submarine External Stowage, <i>Daniel Miller</i>
12:15	12:45	SHM13	Laser Lock-in Thermography for Fatigue Crack Detection, <i>Yun-Kyu An, Ji Min Kim and Hoon Sohn</i>	SHM63	Distributed Optical Fibre Sensors and Their Applications in Pipeline Monitoring, <i>P. Rajeev, J. Kodikara, W.K.Chiu, T. Kuen</i>	11:30	12:00	SHM58	An Amount of Wetness Sensor for Environmental Monitoring, <i>Richard Muscat and Alan Wilson</i>	SHM3	Application of Wavelet Parameters for Impact Damage Detection in Plates, <i>Tristan J. Shelley and C.K. Liew</i>		11:30	12:00	SHM49	Locating Point of Impact on an Anisotropic Cylindrical Surface using Acoustic Beamforming Technique, <i>Hayato Nakatani, Talleh Hajzargarbashi, Kaita Ito, Tribikram Kundu and Nobuo Takeda</i>	SHM82	Applications of Compressive Sensing Technique in Structural Health Monitoring, <i>Yuequan Bao, Hui Li, Jinping Ou</i>
12:45	13:45	LUNCH		LUNCH		LUNCH		LUNCH		LUNCH		LUNCH		LUNCH				
Session Theme		1.3 Optical Fibre based SHM		2.3 SHM Techniques and Robotics	Session Theme		3.3 Infrastructure		4.3 Acousto-Ultrasonics	Session Theme		5.3 Acousto-Ultrasonics		6.3 Infrastructure and Medical				
Chair		Peter Foote		Chin-Hsiung Loh	Chair		Michael Todd		Wieslaw Ostachowicz	Chair		Don Price		Alan Wilson				
13:45	14:15	SHM34	Development of the Damage Detection Method for CFRP Structures Using Distributed BOFDA Optical Fiber Sensor, <i>Nozomi Saito, Takashi Yari, Kanehiro Nagai and Kiyoshi Enomoto</i>	SHM53	Analysis of Vibro-Acoustic Modulations in Nonlinear Acoustics Used for Impact Damage Detection - numerical and experimental study, <i>Lukasz Pieczonka, Andrzej Klepka, Wieslaw J. Staszewski, Tadeusz Uhl and Francesco Avmerich</i>	13:30	14:00	SHM29	Dynamic Tests and Symptom - Based Reliability of a Set of Dismounted Bridge Beams, <i>Antonino Quattrone, E. Matta, L. Zanotti Fragonara, R. Ceravolo, A. De Stefano</i>	SHM19	Time-Domain Hybrid Global-Local Prediction of Guided Waves Interaction with Damage, <i>Matthieu Gresil, Yanfeng Shen, Banibrata Poddar and Victor Giurgiutiu</i>		12:30	13:00	SHM4	Damage Identification and Assessment in Tapered Sandwich Structures Using Guided Waves, <i>Samir Mustapha and Lin Ye</i>	SHM60	Experimental Testing of Vibration Analysis Methods to Monitor Fracture Healing of a Fixated Pelvis using Synthetic Pelvises: A Preliminary Study, <i>Lydia Chwang Yuh Wong, Wing Kong Chiu, Matthias Russ, Susan Liew</i>
14:15	14:45	SHM73	Strain Measurements using Fibre Bragg Gratings during Full-Scale Structural Testing of an F/A-18 Centre Barrel, <i>Tyler Schembri, Silvia Tejedor and Claire Davis</i>	SHM44	Damage Assessment Methodology for Nonstructural Components With Inspection Robot, <i>Yoshihiro Nitta, Akira Nishitani, Atsumi Iwasaki, Morimasa Watakabe, Shinsuke Inai and Iwao Ohdomari</i>	14:00	14:30	SHM28	Verification of Structural Health Assessment Methods using Full-Scale Collapse Test Data of Four-Story Steel Building, <i>Yushi Shinagawa and Akira Mita</i>	SHM32	Nonlinear Properties of Lamb Waves under Modulation of Fatigue Damage: Finite Element Simulation with Experimental Validation, <i>Ming Hong, Chao Zhou, Zhongqing Su and Li Cheng</i>		LUNCH					
14:45	15:15	SHM21	A Robust Procedure for Damage Detection from Strain Measurements Based on Principal Component Analysis, <i>Alfredo Guemes, J. Sierra-Pérez, J. Rodellar and L. Muíca</i>	SHM41	Active Evacuation Guidance and Structural Health Monitoring System for Buildings using Sensor Agent Robots, <i>Akira Mita and Daiki Ise</i>	14:30	15:00	SHM36	Optimal Structural Health Monitoring Feature Selection via Minimized Performance Uncertainty, <i>Zhu Mao, Michael D. Todd</i>	SHM61	Understanding of the Scattering of Incident Stress Waves by Defects on the Blind Side of a Fuel Vent Hole, <i>Caine Doherty and W.K. Chiu</i>		4th APWSHM Networking Event: Tour to Phillip Island					
15:15	15:45	SHM80	<b>Prediction of obsolete FBG sensor using ANN for efficient and robust operation of SHM systems</b> , <i>Gayana C. Kahandawa, Jayantha A. Epaarachchi, Hao Wang and K.T. Lau</i>	SHM42	Sensor Agent Robot with Servo-Accelerometer for Structural Health Monitoring, <i>Tatsuya Akiba, Nobukazu Lee and Akira Mita</i>	15:00	15:30	SHM57	Structural Health Monitoring of Research-Scale Wind Turbine Blades, <i>Stuart G. Taylor, Kevin M. Farinholt, Gyuhae Park, Charles R. Farrar, Michael D. Todd, Jung-Ryul Lee</i>	SHM22	Prediction and Measurement of Lamb Wave from Debondings at Structural Features in Composite Laminates, <i>Ching-Tai Ng and Martin Veidt</i>		LUNCH					
15:45	16:15	BREAK		BREAK		BREAK		BREAK		BREAK		BREAK		BREAK				
Session Theme		1.4 Optical Fibre based SHM		2.4 Robust Networking	Session Theme		3.4 Vibration-based SHM		4.4 Transducer Development	Session Theme		5.4 Acousto-Ultrasonics		6.4 Infrastructure and Medical				
Chair		Claire Davis		Chun Wang	Chair		Yuequan Bao and Dongyu Zhang		Hoon Sohn	Chair		Don Price		Alan Wilson				
16:15	16:45	SHM38	Distributed Strain Monitoring for Damage Detection in CFRP Bolted Structures with Embedded Optical Fibres, <i>Nobuo Takeda, Shu Minakuchi and Takeyuki Nadabe</i>	SHM2	High Temporal Accuracy for Data in Distributed Networks of Sensors, <i>Alan Wilson, Tim Wilson and Peter Vincent</i>	16:00	16:30	SHM81	Structural Seismic Damage Detection Using Fractal Dimension of Time-Frequency Feature, <i>Dongwang Tao, Dongyu Zhang and Hui Li</i>	SHM71	Interaction of High Frequency Lamb Waves with Surface-Mount Sensor Adhesives, <i>Patrick Norman, Claire Davis, Cedric Rosalie and Nik Rajic</i>		LUNCH					
16:45	17:15	SHM46	Scattering Matrix Approach to Informing Damage Monitoring and Prognosis in Composite Bolted Connections, <i>Colin Haynes, Nobuo Takeda, Michael Todd</i>	SHM66	Dynamically Reconfigurable Multivariable MEMS Sensor Array for Unattended Systems, <i>Stephen van der Velden, Ian Powlesland, Steve Galea, Jugdutt Singh</i>	16:30	17:00	SHM24	Substructure Damage Detection Method for Shear Structure Using Sub-time Series and ARMAX, <i>Liu Mei and Akira Mita</i>	SHM64	Novel Transducer for Characterization of Low-Impedance Materials, <i>Roberto Dugnani</i>		LUNCH					
17:15	18:15	Panel Session	Chair: Steve Galea (DSTO, Australia) <b>Opportunities and Issues associated with SHM Implementation</b> Panel: <i>Peter Foote (Cranfield University, UK), Luis Gustavo dos Santos (EMBRAER, Brazil), Ignacio Perez (ONR, USN), Nobuo Takeda (University of Tokyo, Japan), Chin-Hsiung Loh (National Taiwan University, Taiwan) and Nik Rajic (DSTO, Australia)</i>	Chair: Steve Galea (DSTO, Australia)		17:00	17:30	SHM18	Damage Detection for the Los Alamos Nonlinear Bookshelf Structure, <i>Mohammad Jamal-Ahmad and Jonathan Carter</i>	SHM59	An Enhanced Experimental Facility for Durability and Performance Characterisation of Piezoelectric Transducers for Structural Health Monitoring, <i>George Jung, Steve Van der Velden, Kelly Tsoi and Nik Rajic</i>		LUNCH					
18:30	20:30	Welcome Reception		Welcome Reception		17:30	18:00	SHM23	Effectiveness of ANN and Optimization Techniques Coupled with Surrogates in Delamination Prediction, <i>Obinna K. Ihesiolor, Krishna Shankar, Zhifang Zhang, and Tapabrata Ray</i>	SHM79	Behaviour of Piezoelectricity of PVDF used in Structural Health Monitoring, <i>Arup Saha Chaudhuri</i>		LUNCH					
18:30				19:00				19:00				19:00						
Welcome Reception				Conference Dinner				Conference Dinner				Conference Dinner						

