

The 7th Australasian Congress on Applied Mechanics (ACAM 7)

9 - 12 December 2012

The National Committee on Applied Mechanics of Engineers Australia is hosting the 7th Australasian Congress on Applied Mechanics (ACAM 7) in Adelaide, Australia on December 9th - 12th 2012 at the University of Adelaide.

The Congress aims to provide an international forum for researchers, industry practitioners, engineers and postgraduate scholars to promote, exchange, and disseminate knowledge and experiences of the most recent results and advances in a wide range of topics in Applied Mechanics.

To ensure a high-quality congress, all papers will be peer reviewed by members of the ACAM 7 Technical Committee. Final acceptance of the papers will be contingent on this review process. The peer review status of the papers will be available by mid of September 2012, and the final submission date for revised papers is 23rd September 2012.



ENGINEERS
AUSTRALIA

Advances in Applied Mechanics Research

Conference Proceedings

7th Australasian Congress on Applied Mechanics (ACAM 7)

9th – 12th December 2012

The University of Adelaide

Program 7th Australasian Congress on Applied Mechanics

| Time | | 9th December | | 10th December | | 11th December | | 12th December | | | |
|--------|---------|---|---|--|---|--|---|--|---|---|--|
| From | To | Pre-Conference | | Day 1 | | Day 2 | | Day 3 | | | |
| 0900 | 0945 | | | Registration Open/ Arrival Tea/Coffee | | Arrival Tea/Coffee | | Arrival Tea/Coffee | | | |
| 0945 | 1020 | Opening Ceremony (20 min) Napier 102 | | Keynote Speaker - Prof. Stephen Grano "New Challenges in Power, Resource and Mineral Industries" (25 mins) Napier 102 | | Keynote Speaker - Prof. Tony Kinloch "The Mechanics and Mechanisms of Fracture of Nano-modified Polymers" (45 mins) Napier 102 | | Keynote Speaker - Dr. Sabrina Vantadori "Stress-Intensity Factors and Fatigue Growth for Surface Cracks" (45 mins) Napier 102 | | | |
| | | Morning Tea (35 mins) | | Morning Tea (35 mins) | | Morning Tea (35 mins) | | Morning Tea (35 mins) | | | |
| Rooms | Streams | Napier G03 | Napier G04 | Napier 102 | Napier G03 | Napier G04 | Napier 102 | Napier G03 | Napier G04 | Napier 102 | |
| Chairs | | Session 1: Fracture Mechanics I | Session 2: Dynamics I | Session 3: Bio-Mechanics I | Session 10: Nano & Micro Mechanics | Session 11: SHM & NDT II | Session 12: Solid Mechanics I | Session 17: Fluid-Structure | Session 18: Rock Mechanics | Session 19: Solid Mechanics II | |
| 1020 | 1040 | Prof. Liangchi Zhang Toribio, J. [145] Evolution of compliance in round bars subjected to tensile and bending fatigue cracking | Prof. Nong Zhang Handali, R.B. [120] Bearing fault simulation using finite element model updating and reduction techniques | Dr. Paul Grimshaw Al-Dinni, R. [82] A subject-specific model of human buttocks and thighs in a seated posture | Prof. Tony Kinloch Lurie, S. [152] Gradient model of adhesion: mechanical properties and fracture of micro/nano-structured materials | Dr. Francis Rose Hu, Q. [71] Model updating of the rail-sleeper ballast system and its application in ballast damage detection | Prof. Paolo Lazzarin Li, J. [180] Super-harmonic resonance response of a quadratically nonlinear oscillator involving time delay | Dr. Sook-Young Mo Cheung, M. [29] Single-image attenuation correction to facilitate instantaneous planar imaging of densely seeded particle-laden flows | Dr. Arcady Dyskin Khamis, A. [148] Steady flow towards a row of collinear hydraulic fractures | Dr. Stuart Widley Fang, C. [70] Development of a rapid drop test for surface quality inspection | |
| 1040 | 1100 | Jones, R. [170] The short crack anomaly in aerospace structural materials | Yu, M. [22] Identification of foundations in rotating machinery using modal parameters | Shahmiri, R. [142] Finite element analysis of an implant-assisted removable partial denture with different positions of the rest arm | Liu, M. [31] Origin of the implantation and annealing effects on the residual stress release in a silicon-on-sapphire system | He, S. [48] Location and depth of delamination damage determined by an inverse method | Vasiliev, A. [167] The analytical solution of contact problem about torsion of transversely isotropic elastic half-space with an inhomogeneous coating | Ghanadi, F. [69] A review of skin friction drag reduction within the turbulent boundary layer | Bortolan Neto, L. [81] On the residual opening of cracks with rough faces stimulated by shear slip | Ashraf, M.A. [79] A numerical study of the impact properties of sandwich panels with different cores | |
| 1100 | 1120 | Kotousov, A. [5] Coupled Fracture modes in three-dimensional Fracture Mechanics | Lutnyy, V. [104] A bearing fault classifier using Artificial Neuro-Fuzzy Inference System (ANFIS) based on statistical parameters and Daubechies wavelet transform features | Uddin, M. [162] On the influence of acetabular cup wear and orientation on contact mechanics of dual mobility hip implants | Khan, M. [33] A note on the reliability of nonidentification: effect of sample standing | Chiu, W.K. [177] Integrating structural health monitoring into structural design | Pastermak, E. [138] Homogenisation methods in mechanics of fragmented solids and hybrid materials | Herath, M.T. [100] Performance analysis and optimisation of bend-twist coupled composite hydrofoils using fluid-structure interaction | Kuruppu, M.D. [112] Development of a standard method for determining the plane strain fracture toughness of rock | Hutchinson, T. P. [89] Testing in order to measure the protection against impact of people, manufactured items, and agricultural produce: How to consider all severities of shock | |
| 1120 | 1140 | Wilson, J. [144] Modelling the complex manufacturing history of a pipework joint, assessment of its through life creep-fatigue and calculation of the integral using Finite Element based methods | Mammi, M. [106] Correlation of vibration and cutting forces in thin-walled machining | Thota, N. [209] Develop and validate a biomechanical surrogate of the human thorax using corrugated sheets: A feasibility study | Liu, M. [35] The mechanism of nano-scale shear banding in metallic glass | Yezmez, M. [75] An experimental investigation of damaged plain-weave reinforced laminates using modal analysis | Berto, F. [26] On the non singular higher order terms in bi-dimensional and three-dimensional engineering applications | Choudhry, A. [122] Turbulent wake study of NREL phase VI wind turbine in virtual wind tunnel using Large Eddy Simulation | Hashemi, S.S. [98] Effect of grain bonding on the stability of a borehole drilled through low cemented formations | Stanton, A. [77] Experimental characterisation of the formability of a thermoplastic fibre laminate | |
| 1140 | 1200 | Daniel, W. [232] An investigation on rail squat prediction due to rolling contact fatigue | Smith, W.A. [240] Cepstrum-based operational modal analysis: regeneration of frequency response functions | Seanson, D. [47] Use of a damped Hertz contact model to represent head impact safety tests | Toribio, J. [150] Strength anisotropy and mixed mode fracture in cold drawn prestressing steel wires | Lam, H.F. [228] Model updating and the detection of joint defects utilising measured vibration data | Zhang, L.C. [34] An assessment of two statistical models for elastic contact analysis between rough surfaces | Xue, Y. [11] Experimental study of the flow structure in a vortex tube | Zhang, L.C. [67] A method for estimating the fracture toughness of rocks | Dixon, A. [183] Strip buckling from site-guard contact during strip rolling | |
| 1200 | 1300 | Lunch (1 hour) | | | | BBQ Lunch (1 hour) | | | | Lunch (1 hour) | |
| 1300 | 1345 | Keynote Speaker - Prof. Bob Adams "Can we really predict accurately the strength of adhesively bonded joints?" (45 min) Napier 102 | | | | Plenary Lecture by Prof. Nong Zhang "Passive and Active Hydraulically Interconnected Suspensions and their Applications" (45 min) Napier 102 | | | | Plenary Lecture by Prof. Yuris Dzenis "Design, Nanomanufacturing, and Mechanics of Novel Superstrong/Tough Continuous Nanofibers for Next Generation Supercomposites" (45 min) Napier 102 | |
| Rooms | Streams | Napier G03 | Napier G04 | Napier 102 | Napier Undercroft and Overcroft / Foyers | | | Napier G03 | Napier G04 | Napier 102 | |
| Chairs | | Session 4: Composites I | Session 5: Dynamics II | Session 6: Bio-Mechanics II | Poster Sessions 13 | | | Session 20: Composites III | Session 21: Computational Mechanics | Session 22: Optimization / System Identification | |
| 1350 | 1410 | Prof. Bob Adams Wang, C. [172] Effects of adhered thickness on the bond strength measurement of adhesive bonded repairs | Prof. Robert Randall McKee, K. [147] Modification of the ISO-10816 centrifugal pump vibration severity charts for use with Octave band spectral measurements | Prof. Wing Kong Chiu Peng, Z. [46] Investigation of nano-mechanical properties of cartilages of sheep knee joints | Koss, L.L. [24] Mini-trampoline as a human structural vibration exciter | Wong, C.Y. [56] Minimising solid particle erosion in an annular cavity | Aryani, P. [57] Using 3D Scanning laser vibrometry for imaging delamination defects in composites | Prof. Yuris Dzenis Dawny, S. [61] Effect of preheat temperature on the formability of carbon fibre/PEEK composites | Prof. Filippo Berto Sexton, A. [78] Finite element simulation of the stretch forming of annealed aluminium sheets | Lu, Z. [113] Topology optimization of lightweight structures using a meshless Shepard function approximation | |
| 1410 | 1430 | Ashraf, M.A. [202] Flexure analysis of composite pipes during reeling process | Karachevseva, I. [133] Investigation of influence of technological imperfections on the dynamic behavior of the packages of the steam turbine blades | Fletcher, L. [73] Effects of irradiation and non-enzymatic glycation on the fracture resistance of bovine cortical bone | Ilincu, C. [59] An analytical - FEA approach to lifetime estimation of mining equipments | Nisajati, A. [87] Experimental study for electrochemical discharge machining (ECDM) cutting using a stratified disk transfer | Dobrota, D. [118] Research on the influence of rubber waste and devolatilisation technology on the characteristics of reclaimed rubber | Kazmi, M. [140] Exploring the Potential for Vacuum Assisted Oven Consolidation (VAOC) of Natural Fibre Reinforced Thermoplastic Sheets (NFRTS) | Dobrota, D. [119] Methods for determining rubber and composite materials with rubber matrix breaking resistance | Kepple, J. [6] A new multi-objective robust optimisation methodology | |
| 1430 | 1450 | Zanjani, N.A. [64] Investigation on the wrinkling limit diagram of self-reinforced polypropylene woven composite at room temperature | Shufrin, I. [131] Stationary points created by resonances in a chain of bilinear oscillators | Meliga, S. [51] Determination of stress field caused by microprojection arrays contacting and impacting hyperelastic layered skin | Alipourmirabad, M. [178] Prediction of welding residual stresses in flat plate(X80) | Mohammad, R. [212] Transient Response for Different Support of Pipes with Flowing Medium Subjected to Impulse Loading | Kartavvikh, A. [191] Tailored microstructure creation of TiAl-based refractory alloys within VGF solidification | Takagi, M. [116] Development and performance of all bamboo-based green composites | Peng, H.Y. [98] The modification of finite element model of a coupled slab system utilizing measured modal parameters | Akkari, M. [129] Application of extended, uncensored, iterated extended and iterated uncensored Kalman Filter for real-time structural identification | |
| 1450 | 1510 | Jalayanisundaram, S. [53] Numerical investigation of the effect of temperature on the formability of a thermoplastic fibre metal laminate | Luo, Z. [188] Comparison of interval method and Polynomial Chaos method for solving dynamics problem with uncertainties | Wang, X. [199] Parametric studies of optic chiasmal compression biomechanics using finite element modeling | Takagi, M. [194] Extraction and application of cellulose nanofiber from waste materials | Ullirov, T. [203] Finite element modeling of heat exchange in the stroke-affected brain during therapeutic hypothermia | Glinkin, V. [207] Numerical simulation of multicomponent alloy solidification | Shahouf, S. [39] Structural composites embedded with lithium polymer batteries | Mian, M. [182] A new approach to the investigation of mixed lubrication in metal strip rolling | Aksoy, M. [220] Adaptive multiple forgetting factor recursive least square (AMFF-RLS) for real-time structural identification with unknown input | |
| 1510 | 1540 | Afternoon Tea (30 mins) | | Afternoon Tea (30 mins) | | | Afternoon Tea (30 mins) | | Afternoon Tea (30 mins) | | |
| Rooms | Streams | Napier G03 | Napier G04 | Napier 102 | Napier G03 | Napier G04 | Napier 102 | Napier G03 | Napier G04 | Napier 102 | |
| Chairs | | Session 7: SHM & NDT I | Session 8: Manufacturing | Session 9: Life Assessment | Session 14: Automotive Research I | Session 15: Composites II | Session 16: Automotive Research/ Sustainability | Session 23: Dynamics III | Session 24: Engineering Education/ Composites | Session 25: Fracture and Solid Mechanics | |
| 1540 | 1600 | A/Prof. Martin Verdú Su, J. [125] Investigating mode coupling effects in composites beams with delamination damage | Dr. Daniel Yuen Zanjani, N.A. [65] Effect of aspect ratio variations on forming limit diagram of glass-fibre reinforced polypropylene composite at room temperature | Prof. Elena Pasternak Selyshev, P. [226] Non-linear peculiarities of creep in irradiated materials | A/Prof. Dianne Hesterman Walker, P.D. [159] Dynamics and control of gear shifts in a two speed electric vehicle | Prof. Chun Wang Kalyanasundaram, S. [54] On the forming behaviour of woven thermoplastic composite materials | A/Prof. Philip Mathew Wakirovaya, V. [117] Experimental study of a new solar-assisted air-conditioner for performance prediction and energy saving | Eager, D. [25] Characterisation of trampoline bounce using acceleration | Dr. Ching-Tai Ng Kestel, C. [174] "If I record my lectures, no one will attend my class" The transition to multi-modal delivery in Applied Mechanics education | Dr. Sabrina Vantadori Chang, D.H. [141] Plasticity-induced crack closure model for two collinear cracks in plates of arbitrary thickness | |
| 1600 | 1620 | Yang, J. [68] Model updating based structural damage detection of transmission tower: experimental verification by a scaled-model | Kuruovla, N. [132] Parametric influence and optimisation of wire-EDM on hot die steel | Pramanik, M. [246] Life assessment of welded joints operating within creep range | Zhang, N. [187] Empirical analysis of a roll plane hydraulically interconnected suspension system under vehicle articulation mode | Rahmandawa, G. [215] Detecting delamination in a composite structure using an embedded FBG-AE hybrid system | Amza, G. [92] Research on determining the coefficient of environmental pollution produced by automatic submerged arc welding | Sek, M.A. [222] On chaotic interaction between product and cushioning during random vibration testing of protective packaging for transportation | Peng, Z. [19] Teaching first year engineering dynamics at a small and large Australian University | Wildy, S. [196] Bending strain measurements utilising a scanning laser Doppler vibrometer | |
| 1620 | 1640 | Ng, C.T. [146] The low-frequency scattering of the AD Lamb wave from delaminations in quasi-isotropic composite laminates: Theoretical and finite element studies | Natori, K. [211] Forming of housing by ultrasonic press using ultrafine-grained semi-solid light metal | Parker, A. [76] Improving structural integrity assessment of nonlinear packaging materials | Guzzoni, A. [129] Using canonical variate analysis to detect engine misfires | Yin, L. [204] Influence of microwave energy on mechanical strength in sugarcane | Analals, D. [18] Evaluation of experimental techniques for establishing vehicle suspension characteristics | Dyskin, A. [115] Vertical vibrations and detachments of drill bits in rotary drilling | Wills, C. [41] Improved student engagement in civil and mechanical engineering using a professional peer feedback process | Torregeosa, R.F. [45] Application of Bayesian updating to the risk analysis of fracture of aircraft structures | |
| 1640 | 1700 | Chiu, W.K. [176] Numerical investigation of the scattering of ultrasonic guided wave in hard-to-inspect regions | Rahman, S. [255] Development of a trajectory-based 3D surface roughness model for the micro end-milling process | Peng, D. [166] A simple method for simulating the growth of rain squats | Zhang, N. [155] Modelling and parameter estimation of an active hydraulic suspension using experimental method | Davey, S. [62] Finite element analysis of the formability of carbon fibre/PEEK composite sheets | Pok, T. [52] Literature review of pedestrian injury severity with vehicle impact speeds and the development of curves to predict pedestrian injury likelihood (AIS 1 to AIS 6) versus vehicle impact speeds | Mohamed, N. [214] Dynamic analysis of beam with multiple cracks using transfer matrix method | Uddin, M.S. [186] Finite element modeling and analysis of a filament wound spinning composite disk | | |
| 1700 | 1720 | Welcome Reception at Cloisters (5-8pm) | | | | | | | | Closing Ceremony (Drinks, finger food, etc) | |
| 1720 | 1800 | | | | | | | | | | |
| 1800 | 1900 | | | | | | | | | | |
| 1900 | 2200 | Conference Dinner at National Wine Centre (6:30-9:30pm) | | | | | | | | | |