Conference Program

Thursday, Session TM1 (9:00-10:40) – Advances in Health Monitoring and System Identification

292. A Wavelet-Based Framework for System Identification of Tall Buildings under Transient Wind Events A. Bentz and T. Kijewski-Correa
293. Mode Shape Identification with High Spatial Resolution using Mobile Sensors J. Marulanda and J. M. Caicedo
296. An Enhanced Algorithm for Stochastic System Identification of Long Span Bridges A. L. Hong and R. Betti
294. A Time-Domain Covariance-Based Parameter Estimation Method for Torsional Shear Buildings: Application to IASCASCE Benchmark Studies R. Omrani, R. Hudson and E. Taciroglu
302. Wavelet-based Second Order Blind Identification of Structures B. Hazra and S. Narasimhan

Thursday, Session TM2 (9:00-10:40) - Dynamics

371. Simulation of Non-Stationary Random Processes with Time and Frequency Modulation for Seismic Ground Motion Applications M. Shields and G. Deodatis
355. Development of a Real-time Hybrid Testing System X. Gao, S. Dyke, T. Tidwell, H.-M. Huang, C. Lu and C. Gill
381. On the Reconstruction of the Soil's Shear Wave Velocity Profile J. W. Kang, L. Kallivokas, K.-S. Park and K. Stokoe
358. Dynamic Soil Structure Interaction for Elastic Foundations in Coupled Translational and Rocking motion S. Nayyeri and K. Ebrahimi
384. Seismic Analysis and Design of Elevated Water Tanks

Thursday, Session TM3 (9:00-10:40) – Mechanics of Advanced Materials and Structures

527. Analysis of Concrete Dam Crack under Coupled Seepage and Temperature Field Based on EFM X. Liqun, S. Zhenzhong and L. Chenliang
528. An Experimental Technique for Developing Intermediate Strain Rates on Ductile Metals H. Gardenier A. Palazotto and R. Larson
531. Dynamic Characteristics of Acoustic Metamaterials with Anisotropic Mass H.-H. Huang and C.T. Sun
535. Vibrations of Noncircular Composite Cylinders H.-C. Lo and M. W. Hyer
537. Numerical Modeling of Low Velocity Impact Damage in Composite Laminates J. Xu

Thursday, Session TM4 (9:00-10:40) - Biodynamics

313. Implementaion of an Efficient Algorithm for Virtual Prototyping of Dynamics of Molecular Conformation S. Duan and A. Ries
311. Brain Tumor Simulation using a Hybrid Compartment- Continuum-Discrete Model M. L. Tanaka, W. Debinski, I. K. Puri
312. An Integrated Procedure for Computer Simulation of Dynamics of Molecular Structures S. Duan
314. Finite Time Blow-Up and the Phenomena X. Li, S.-X. Shang
380. Multibody Computational Model for Force and Motion Analysis of Shoulder-Upper Arm Complex S. Duan

Thursday, Session TM5 (9:00-10:40) – Nano-Mechanics

722. Inextensible Elastica Model for the Collapse of Nanotubes T. Tang and N. J. Glassmaker
723. An Atomic-Scale Instability Criterion for Defect Initiation T. J. Delph, J. A. Zimmerman and J. M. Rickman
724. Atomic-Scale Surface Stresses in (001)Si and Continuum Instabilities T. J. Delph
726. Original Surface Stress Generation of Alkanethiols on Gold Surface Y. Zhao, K. Kang and P. Shrotriya
727. Buckling of a Graphene Sheet Interacting with a Rigid Substrate P. Wilber

Thursday, Session TM6 (9:00-10:40) – Stability of Solids and Structures

809.Effects of Core Models in the Interactive Buckling of Sandwich Struts A. Wadee, S. Yiatros and M. Theofanous
801. Local Buckling of Rotationally and Vertically Restrained Orthotropic Plates P. Qiao and X. Huo
803. On the Lateral-Torsional Buckling of Partially Composite Beams N. Challamel and U. A. Girhammar
805. Flat Composite Beam Flexural-Toirsional Buckling Analysis J. Cheng
807. Snap Through of Curved Beams - A Nonlinear Thermomechanical Coupled Field Problem Y. Chandra and I. Stanciulescu

Thursday, Session TM7 (9:00-10:40) – Fluid Mechanics

396. PIV Measurements and Physical Factors of Dual Synthetic Jets Interactions Z.-B. Luo, Z.-X. Xia and L. Wang
387. Investigation of Turbulent Structures in Open Channel Flow using Proper Orthogonal Decomposition (POD) V. Roussinova, and R. Balachandar
390. Mechanical and Optimization Analyses for Novel Wound Composite Axial Impeller J. Wang, N. Mueller, Q. Li, and L. Bruce, M.S.
321. Study of Passive Rotational Motion Induced by Wing Flexibility in Dipteran Flapping Flight: Nonlinear FEM Dynamic Similarity Fluid Structure Interaction Analysis D. Ishihara T. Horie and M. Denda
322. Modeling Targeted Delivery of Nanoparticles under Vascular Flow Y. Liu and S. Shah

Thursday, Session TM8 (9:00-10:40) – Mechanics of Materials

516. Laser Generated Plasma: A New Approach to Advanced Material Coatings R. Akarapu, A. Nassar, S. Copley and J. Todd
587. Evolution of Agglomeration States of Moist Granular Materials with Wide Particle Size Spectra P. Fu, D. Jones and J. T. Harvey
586. Adaptability of Contact Laws for Polygon Type Discrete Element Methods P. Fu and J. T. Harvey
513. The Clay of Fez (Morocco), Materials of High Technology B. Jilali

Thursday, Session TM9 (9:00-10:40) – Advanced Materials

503. Double Vacuum Bagging Coupled with Quickstep Curing Process L. Khan, A. Nesbitt, and Z. Khan
288. Prediction of Carbon Fiber Properties using Artificial Neural Networks V. Devaraj
279. Characterization of Particulate Reinforced Aluminum Reinforced Metal Matrix Composite C. Seakher, M. Kasibhatla, R. Kali Prasad, S. Krovvidi, B.D. Puppala, Sudhakar I, R.Shankar P
282. The Drilling Induced Failure Modes in T800/924C Composite-Epoxy Laminate Z. Mohammad
283. Prediction of Environmental Degradation of Fibre Reinforced Plastics R. Paskaramoorthy, E. Ngoy and R. Reid

Thursday, Session TM10 (9:00-10:40) – Solids and Structures

797. The Effect of Varying Strain Rates and Stress States on the Plasticity, Damage, and Fracture of Aluminum Alloys M.T. Tucker, M.F. Horstemeyer, W.R. Whittington, K.N. Solanki and P.M. Gullett
795. A Study of Restitution Coefficient in Low Velocity Impact: Size and Material Type Effects K. Hashemnia, A. Aryaei, and K. Jafarpur
796. Computational Life Assessment of Nonlinear Viscoelastic Components S. Ozupek
789. Recent Advances on the Investigation of a Class of Constrained Aeolotropic Solids A. R. Aguiar and R.L. Fosdick
793. Coupled Study of Kinematic and Thermal Fields at the Microstructure Scale of Metallic Materials L. Bodelot, L Sabatier, E. Charkaluk and P. Dufrenoy

Thursday, Session TM11 (9:00-10:40) – Sym. In Honor of Zdenek Bazant

833. Mechanical Testing of Nanostructures - Seeing the Invisible H. D. Espinosa and R. Agrawal
830. Large Deformation and Electrochemistry of Polyelectrolyte Gels Z. Suo
828. Dislocation Dynamics across Twin Boundaries H. Huang
835. Molecular Mechanics Simulations of Instabilities in 3D Deformations of Gold Nanospecimens A. A. Pacheco and R. C. Batra
823. On the Size Effect on Ductile Void Growth in FCC Single Crystals and Polycrystals J. Segurado and J. LLorca

Thursday, Session TM12 (10:50-12:30) – Nano-, Bio-, Cellular and Multi-Functional Materials

708. Wrinkled Surface Topographies of Electrospun Polymer Fibers L. Wang, C.-L. Pai, M. Boyce and G. Rutledge
706. Dynamic Mechanical Analysis of Magnetorheological Smart Nanocomposites R. Li and L. Sun
712. Fabrication and Modeling of InTl Shape Memory Alloy Nanowires F. Phillips, H. Zheng and D. C. Lagoudas
713. Physical Properties of Glassy Carbon Films and Nanowires A. Haque and M. Manoharan
711. Mechanical and Electrical Properties of Carbon Nanofiber/Epoxy Nanocomposites L. Sun, Z. Ounaies, X.-L. Gao, C. A. Whalenb and Z. Yang

Thursday, Session TM13 (10:50-12:30) – Nano-Materials

467. Hierarchical Nanostructures are Crucial to Mitigate Ultra-small Thermal Point Loads Z. Xu and M. J. Buehler
718. Adherence of Microorganisms to Carbon Nanostructures S. Mazumder, I. K. Puri, J. Falkinham, A. M. Dietrich and R. L. Mahajan
719. Multiscale Reinforced Bio-based Composites: Synergistic Behavior of UPE/EML blends, Natural fibers and Nanoclay R. Burgueno, M. Haq, A. K. Mohanty and M. Misra
720. Hollow Nanospheres, Modeling and Open Questions F.D. Fischer
721. Guided Assembly of Three-Dimensional Nanostructures via Elastic Interactions Y. Lou

Thursday, Session TM14 (10:50-12:30) – Stability of Solids and Structures

800. Eigen-Analysis of Shear Buildings under Gravity Loads M. Sahin
802. Lower Bound Buckling Pressures for Metal Tanks with Variable Thickness L.A. Godoy and R. Jaca
806. Effect of Hydroplaning on Hydrodynamic Stresses Applied on Submarine Landslides H. R. Hu
808. Dynamic Stability of Water Tanks S. Jerath and W. Qiao
812. Torsion Warping Transmission at Thin-Walled Frame Joints: Kinematics, Modeling and Influence on the Structural Response C. Basaglia, D. Camotim and N. Silvestre

Thursday, Session TM15 (10:50-12:30) – New Trends in Microporomechanics

316. Ductile Sliding between Mineral Crystals followed by Rupture of Collagen Crosslinks: Experimentally Supported Micromechanical Explanation of Bone Strength C. Hellmich, A. Fritsch and L. Dormieux
734. A Homogenization-based Constitutive Model for Viscoplastic Porous Media with Evolving Microstructure K. Danas, P. Ponte Castaneda
735. Influence of the Temperature on the behavior of Unsaturated Porous Media: a Micromechanical Approach B. V. Tran and X. Chateau
733. Estimation of Influence Tensors for Eigenstressed Multiphase Elastic Media with Non-Aligned Inclusion Phases of Arbitrary Ellipsoidal Shape B. Pichler and C. Hellmich
924. Numerical Modeling of Cortical Bone Adaptation Due to Mechanical Loading Using Finite Elements N. C. Kumar, I. M. Jasiuk and J. A. Dantzig

Thursday, Session TM16 (10:50-12:30) – Instability in Solids and Structures

451. Effect of Geometrical Defects on the Collapse of Straight of Curved Tubes Submitted to External Pressure A. Limam, D. Tran and C. Mathon
459. Ratcheting, Wrinkling and Collapse of Tubes due to Axial Cycling R. Jiao and S. Kyriakides
901. Dynamic Response of Polycarbonate in Tube Expansion Experiments: H. Zhang and K. Ravi-Chandar
460. Effect of Microstructure on Adiabatic Shear Bands in Tungsten Heavy Alloy Hollow Cylinders A. G. Varghese and R. C. Batra

Thursday, Session TM17 (10:50-12:30) – Mechanics of Soft Matter and Soft Intelligent Materials

629. Tribological Properties of Soft-Wet Materials I. Stanciulescu, B. Shen and J. Dolbow
630. Large Deformation and Instability in Swelling Gels Z. Suo
624. Finite Deformation of Incompressible Fiber-Reinforced Elastomers: A Computational Micromechanics Approach J. Moraleda, J. LLorca and J. Segurado
623. An Exact Result for the Macroscopic Response of Porous Neo-Hookean solids M. I. Idiart and O. Lopez-Pamies
628. Models for Composite Dielectric Elastomers W. Hong

Thursday, Session TM18 (10:50-12:30) – Fluid Mechanics

289. Comparison of Different Approaches to Specify Inlet Boundary Conditions for CFD Modeling in a CFB Riser B. Peng, C. Zhang and J. Zhu
370. Large-Eddy Simulations of Sedimentation Process and Particle Dynamics in a Longitudinal Sedimentation Basin of a Water Treatment Plant M. Al-Sammarraee, A. Chan, S. M. Salim and P. L. Lau
411. A Library of Turbulence Closure Schemes G. Savant
851. Prediction of Wind Induced Significant Wave Height using Fuzzy Logic Model A. Altunkaynak and K. H. Wang
419. Finite Element Analysis of Pulse Wave Velocity in Stented Arteries D. B. Cooper and P. P. Vlachos

Thursday, Session TM19 (10:50-12:30) – Mechanics of Materials

562. Collapse Analysis in Geomechanics using the Boundary Element Method J. Chatterjee
582. Boundary Element Method Applied to Fatigue Crack Propagation in a Thin Aluminum Plate M. Sato, P. Sollero and É. L. Albuquerque
600. A Weibull E-N Field Model to be used in the Strain Based Approach H. A. Pinto, A. Fernández-Canteli and E. Castillo
601. Mean Stress Effects and Mean Stress Relaxation in High Strength Aluminum Alloys A. Arcari, N. E. Dowling, C.A. Calhoun and D. C. Moore

Thursday, Session TM20 (10:50-12:30) – Advanced Materials

497. Numerical Simulation of Concrete under High Level of Confinement using 3D Discrete Element Method V. T. Tran, F. V. Donzé and P. Marin
498. The Effect of Cold Expansion Technique on the Fatigue Life Expansion of an Aluminum Alloy and Carbon Steel M. S. Rana and C. Makabe
499. Assessment of Stresses due to Pits induced during Corrosion Degradation Process R. M. Pidaparti and R. Patel
505. The Effect of Micro Dimples on Friction and Wear of Polyoxymethylene during Dry Sliding S. H. Lee, J. Lee, S. Park and M. Cho
280. Fabrication and Validation of Corrugated Wire Mesh Laminate Model for Cancellous Bone J. Choi and K. Shankar

Thursday, Session TM21 (10:50-12:30) – Solids and Structures

784. Point Force Solutions of an Infinite Bi-Material Two-Dimensional Quasicrystal Solids Y. Gao
788. Phase-Field Modeling of Domain Structures in Ferroelectric Thin Films A. Kontsos and C. M. Landis
778. A Magnetoelastic Coupling Constitutive Model for Deformable Magnetized Materials H.-M. Zhou
781. Constitutive Modeling for Simulating Uniaxial and Multiaxial Cyclic and Ratcheting Responses S. Krishna and T. Hassan
783. Potential Fields of an Infinite Medium Containing Arbitrarily positioned Elliptic Cylinders H.-Y. Kuo

Thursday, Session TM22 (10:50-12:30) – Sym. In Honor of Zdenek Bazant

913. Effects of Size and Grain Boundaries on the Energetic and Dissipative Concepts in Thermodynamic Formulation of the Polycrystalline G. Z. Voyiadjis and B. Deliktas
912. Tensile Shock Waves in Rubber J. Niemczura and K. Ravi-Chandar
822. Field Verification of Quasi-Brittle Fracture Mechanics for Snow Slab Avalanches D. McClung
832. Reliability Analysis of Fracture in Piezoelectric Components with a Random Microstructure M. A. Gutierrez and C. V. Verhoosel
831. Cohesive Fracture and Size Effect E. A. Schauffert and G. Cusatis

Thursday, Session TA1 (2:30-4:10) – Advances in Health Monitoring and System Identification

290. Finite Element Updating: Alternative Solutions and Their Probabilities B. A. Zarate and J. M. Calcedo
299. Structural Finite Element Model Updating Using Transfer Function Data A. Esfandiari, M. Sanayei, F. Bakhtiari-Nejad, and A. Rahai
303. Inverse Analysis of Static Data from a Real- World Type II AASHTO Girder to Identify Flexural Stiffness and Effective Prestressing Force R. D. Martin, J.-S. Pei, T. Kang and C. J. Sandburg
295. Assessing Service Induced Mechanical Deterioration of Aircraft Composite Materials Using Distributed Optical Fiber Strain Sensing D. A. Harold and J. C. Duke, Jr.
945. On-line Parametric Identification of Nonlinear Hysteretic Systems with Model Uncertainty E. Chatzi and A. Smyth

Thursday, Session TA2 (2:30-4:10) – Biological and Biologically Inspired Materials

315. Structure Prediction and Nanomechanical Properties of Human Vimentin Intermediate Filaments M. J. Buehler and Z. Qin
317. Micromechanics of Bone Tissue-Engineering Scaffolds based on Resolution Error-Cleared Computer Tomography C. Hellmich, S. Scheiner, B. Pichler, R. Sinibaldi, V. Komlev, F. Rustichelli, C. Renghini, and C. Vitale
318. Bioinspired Design of Dental Structures W. Soboyejo and N. Rahbar
320. Mechanics Modeling of Bone at Nanostructural Level E. Hamed and I. Jasiuk
319. Characterization of Bone Morphology and Effective Properties based on the Spectral Measure of Viscoelastic Operator C. Bonifasi-Lista and E. Cherkaev

Thursday, Session TA3 (2:30-4:10) – Biomaterials

323. Fibrin Networks in Blood Clots sustain Large Extensions due to Protein Unfolding P. K. Purohit
324. The Molecular Structure of Wood Primary Cell Wall Y. Wang and Y. Chen
325. Cell-Biomaterial Interactions under Physiological Flow Conditions S. R. Jadhav, and R. Bhardwaj
335. 3D In-Vivo Geometric Characterization of the Ovine Pulmonary Trunk B. Fata
329. Structural Changes in Ligaments and Tendons during Hysteresis, Creep, and Relaxation R. Sopakayang and R. De Vita

Thursday, Session TA4 (2:30-4:10) - Dynamics

374. Hybrid Modeling of Hysteretic Nonlinear System based on Neural Network X. Shilin and Z. Xinong
364. Optimal Design of Structural Vibration based on Stochastic Finite Element M. Wenhui
368. New Finite Elements for Vibration Analysis of Cracked Members
383. Stresses in Thin, Multi-Layer Pipes in large Radial Vibrations S. Nayyeri and A. Esmaeily
356. A Multibody Dynamics Approach for Modal and Vibration Analysis of Wind Turbine S. Duan

Thursday, Session TA5 (2:30-4:10) – Instability in Solids and Structures

443. Buckling with Residual Stresses C. D. Coman
445. On Lateral-Torsional Buckling of Non-Local Beams N. Challamel and C. M. Wang
449. Inelastic Stability and Second-Order Analysis of Imperfect Columns with Non-linear Semirigid Connections under Eccentric Axial Loads J. D. Aristizabal-Ochoa
362. Vibration and Snap-Through of Bent Elastica Strips Subjected to End Rotations L. N. Virgin and R. H. Plaut
450. Free-Vibration Characteristics of Unsymmetrically Laminated Composite Plates with Multiple Equilibrium Configurations G. A. Vogl and M. W. Hyer

Thursday, Session TA6 (2:30-4:10) – Mechanics of Advanced Materials and Structures

533. Evaluation of Load Distribution Factor by Approximate Series Solution J. F. Davalos, B. Zou and A. Chen
941. Evaluation of Concrete Mix Designs for Migrating Early-Age Shrinkage Cracking J. Zhuang, P. Qiao, and D. Mclean
523. Study of Inclusion-Matrix Interfacial Stresses in Composites containing Negative-Stiffness Phases C. Ko
524. Boundary Layer Effect in Partially Composite Beams N. Challamel and U. A. Girhammar
525. Mechanics of Non-Coplanar Mesh Design for Stretchable Electronic Circuits J. Song and Y. Huang

Thursday, Session TA7 (2:30-4:10) – Mechanics of Soft Matter and Soft Intelligent Materials

626. Macroscopic Instabilities in Fiber-Reinforced Elastomers at Finite Strain M. Agoras, O. Lopez-Pamies and P. Ponte Castaneda
571. Mechanics of Composites with Two Families of Finitely Extensible Fibers undergoing Large Deformations G. Shmuel and G. deBotton
625. Damage by Decohesion during Finite Deformation of Fiber-Reinforced J. Moraleda, J. Segurado and J. LLorca
622. A New Hyperelastic Model for Rubber Elastic Materials O. Lopez-Pamies
627. Nonlinear Effects in Electro-Active Materials L. Dorfmann

Thursday, Session TA8 (2:30-4:10) – Mechanics of Materials

595. Estimation of Fracture Process Zone size and True Fracture Energy using Acoustic Emission Data M. Sundareshan, R. Prasad, H. E. Naddaf and B. L. Karihaloo
569. Microstructure Evolution using Poroelastic Characterization of Early Age Hydrating Cement Paste X. Wang, K. V. Subramaniam and F.-B. Lin
564. Fracture Properties of Mode II for High Strength Concrete M. G. I. Mahdy, M. A. Imam and A. I. Elsherbiny
558. An Experimental Study on the Fatigue Life of Prestressed Concrete Beams under Random-Amplitude Fatigue Loading Y. Song and H. Wang
514. Effect of Aggregate Saturation Methods on Fresh Lightweight Concrete Properties N. Kabay and F. Akoz

Thursday, Session TA9 (2:30-4:10) – Advanced Materials

276. Nonlinear Variational Bounds based on Extended Hashin-Shtrikkman Principles P. P. Prochazka
278. Numerical Investigation of Progressive Damage of 2D Triaxially Braided Composite in Tensile Test X. Li and W. K. Binienda
511. Wear Of Automobile Clutch Liner A. Pandey and V. Choudhary
286. Processing and Manipulation of the Lunar Soils for Outpost Use A. B. Hossain and M. S. Alam
506. A New Method for Estimating Size Effect in Granular Materials W. Hu

Thursday, Session TA10 (2:30-4:10) – Solids and Structures

776. A New Method in Sheet Metal forming using Chemical Energy M. Moradi, B. Ghasemi and R. Abbasian
785. The Application of Universal Serendipity Elements as Transition Elements in The Transient Problems S. Kucukarslan
773. Probabilistic Design Optimization for Fatigue Failures of Drillstrings M. G. Sehat
774. Analyzing Random Vibration Fatigue of Drillstrings M. G. Sehat
771. Three-Dimensional Numerical Analysis of Construction Process for Tunnel Opening H. Li

Thursday, Session TA11 (2:30-4:10) – Coastal Hydrodynamics

339. Interaction of Storm Surge and Hurricane Waves: Modeling and Measurements K. Hu, Q. Chen and A. Kennedy
340. Modeling Sediment Resuspension and Transport induced by Storm Wind in Apalachicola Bay X. Liu
341. Effect of Turbulence Models on Numerical Simulation of Wave Breaking and Run-up on a Mild Slope H. Xiao
342. Interaction of a Solitary Wave with a Floating Body K. H. Wang, X. Lu and T. Chu
343. A Parametric Study of Meteorological Forcing in Storm Surge Modeling: A Case Study in Coastal Mississippi H. S. Das

Thursday, Session TA11S (2:30-4:10) – Sym. In Honor of Zdenek Bazant

911. A Unified Potential-Based Approach for Mixed-Mode Cohesive Fracture G. H. Paulino, K. Park and J. R. Roesler
914. Adhesive Inter-Laminar and Cohesive Inner-Layer Damage Mechanisms for Composite Materials G. Borino, B. Failla and F. Parrinello
821. On the Bending Collapse of Hardening-Softening Beams N. Challamel, C. Lanos and C. Casandjian
825. Analytical Modelling of Buckling Driven Delamination in Composite Plates A. Wadee and C. Voellmecke
826. Some Perspectives on the Thermodynamic Driving Force in Ferroelectric Crystals G. J. Weng

S. A. Sarles, M. A. Creasy and D. J. Leo

Thursday, Session TA12 (4:20-6:20) – Advances in Health Monitoring and System Identification

300. Detection of Degraded Stiffness from Multiple Cracks in Plate Structures with Unknown Moving Force Information M.-H. Noh, T. Park and G. Z. Voyiadjis
304. A Multi-Level Damage Localization Strategy for Effectively using the Sources in Wireless Sensor Network G. Yan, Z. Feinstein, G. Hackmann, S. J. Dyke and C. Lu
308. Damage Prognosis using Nonlinear System Identification G. G. Bordonaro, M. R. Hajj, A. H. Nayfeh and J. C. Duke
306. Damage Detection on a Three-Story Structure using Signal-Based Pattern Recognition L. Qiao, A. Esmaeily and H. G. Melhem
305. NDE of Concrete Bridge Deck Delamination using Enhanced Acoustic Method G. Zhang, R. S. Harichandran and P. Ramuhalli
297. Sensitivity Study of Vibration-Based Damage Detection in Beam Structures K. Wang
298. Structural Damage Diagnosis Using Harmonic Forced Vibration and Transfer Functions Response A. Esfandiari, M. Sanayei, F. Bakhtiari-Nejad and A. Rahai

Thursday, Session TA13 (4:20-6:20) – Mechanics of Liquid Crystals

551. Axial-Symmetry Breaking in Constrained Membranes P. Biscari and G. Napoli
552. Modelling Smectic Materials I. W. Stewart
553. Modeling Smectic Materials I. W. Stewart and R. De Vita
554. Smectic Energies and Existence Theorems for Liquid Crystals P. Bauman, D. Phillips and J. Park
555. Isotropic-to-Nematic Phase Transition in a Liquid-Crystal Droplet X. Chen, B. D. Hamlington and A. Shen
556. Experiments in the Formation and Characterization of Durable Droplet-Interface Bilayers

Thursday, Session TA14 (4:20-6:20) – Mechanics of Materials

565. Surface Loading of A Multilayered Viscoelastic Pavement: Moving Load E. Pan and Y. Chen
568. A New Constitutive Theory for Fiber-Reinforced Rubber-Like Materials M. I. Idiart and O. Lopez-Pamies
581. Comparative Predictions of Slip-Systems Hardening Inequalities and a Viscoplastic Power-Law for FCC Crystals in Channel Die Compression K. S. Havner
588. Application of the Linear Combination of Displacement BIE and Hypersingular BIE in Reducing the Condition Number of the System of Equations for Domains with Mathematical Cracks N. Jagtap and Y. Liu
598. Comparison of M-K and MMFC Criteria in Investigation of Formability of a Steel Sheet M. Ketabchi, M. Abbasi and M. Abbasi

Thursday, Session TA15 (4:20-6:20) – Computational Methods for Modeling and Quantification of Structural Flaws

346. Fatigue Failures of Welded Piping Joints: Experiments and Simulations P.-Y. Cheng and T. Hassan
347. Numerical Solution of Combined Boundary-Initial Value Problems For CDM-Based Creep Analysis of Engineering Structures Using Parallel Computing B. Salimi and D. R. Hayhurst
348. Detection and Quantification of Flaws in Structures by the Extended Finite Element Method and Genetic Algorithms H. Waisman, E. Chatzi and A. W. Smyth
349. An Optimally Convergent Discontinuous-Galerkin-based Extended Finite Element Method for Fracture Mechanics Y. Shen and A. J. Lew
350. Regarding SDOF Systems with Piecewise Nonlinear Restoring Force as Differential-Algebraic Equations J. Wright and J.-S. Pei

Thursday, Session TA16 (4:20-6:20) – Geomechanics and Elasticity

420. Finite Element Analysis of Soil Under Explosive Loading G. H. Sutley and R. Regueiro
428. An Analytic Elastic Solution for a Multi-Layered Soil on a Buried Thrust Fault K. T. Chau
430. Three Dimensional Discrete Element Modeling of Undrained Cyclic Response of Granular Media B. Ferdowsi, A. Soroush and R. Shafipour
431. Torpedo Anchors in Soil: CFD and FE Simulations M. S. Raie and J.L. Tassoulas
427. Use of Elastodynamic Reciprocity for the Analysis of Point-Load Generated Surface Waves in an Inhomogeneous Transversely Isotropic Half-Space A. C. Wijeyewickrema, T. Konno and P. Kayestha
424. Flow of Granular Materials in a Rotating Cylinder S. K. Hajra and M. Massoudi

Thursday, Session TA17 (4:20-6:20) – Shape Memory Alloys

758. Shape Memory with Multi-stage Transformations H. Sehitoglu
763. Magnetic Field-Induced Phase Transformation in NiMnCoIn Metamagnetic Shape Memory Alloys I. Karaman, B. Basaran, R. Zhu and H. E. Karaca
764. Modeling of Magnetic Field-Induced Phase Transformations in NiMnCoIn Magnetic Shape Memory Alloys K. Haldar, D. Lagoudas, B. Basaran and I. Karaman
761. Stability Analysis in Magnetic Shape Memory Alloys G. Chatzigeorgiou, K. Haldar and D. C. Lagoudas
910. Cyclic Thermomechanical Behavior Modeling of SMA Materials in Applications L. Saint-Sulpice, S. A. Chirani, and S. Calloch
765. Macroscopic modeling of shape memory alloys for composite structures and materials simulation Y. Chemisky, A. Duval, B. Piotrowski, T. Ben-Zineb and E. Patoor
768. Three-Dimensional Modeling of Viscoplastic Deformation in Shape Memory Alloys D. J. Hartl, G. Chatzigeorgiou and D. C. Lagoudas

Thursday, Session TA18 (4:20-6:20) – Material Response to Shock Loading

479. An Atomic Scale Perspective on the Micro-Mechanisms related to Onset of Spallation in Nanocrystalline Metals at Ultra-High Strain Rates A. M. Dongare, A.M. Rajendran, B. LaMattina, M. A. Zikry and D. W. Brenner
480. Multiscale Modeling of Glass Fiber Reinforced Viscoelastic Composites Subjected to Impact Loads V. F. Teixeira, F. V. Souza and D. H. Allen
481. Experimental and Microstructurally-Based Computational Investigation of the Dynamic Compressive Behavior of High Strength Aluminum Alloys K. ElKhodary, M. Zikry, W. Lee, L. Sun, D. Brenner and B. Cheeseman
482. A First Principles Approximation of Composite Material Response to Shock Tube Pulse W. Xu and E. K. Ervin
483. Z-Transforms and the Optimal Design of Goupillaud Type Layered Elastic Media G. A. Gazonas, A. P. Velo and T. Ameya
484. Impact-induced Deformation and Stress in a LIGA Structure W. W. Chen

Thursday, Session TA19 (4:20-6:20) – Mechanics of Advanced Materials and Structures

526. A New Laminated Model for Functionally Graded Plates with Arbitrary Distributed Elastic Modulus Z. Zhong
538. Size and Geometry Effects on Flow Stress in Bioinspired Metal-Matrix Nanocomposites D. Sen and M. J. Buehler
546. Multiscale Modeling of Triaxially Braided Polymer Matrix Composites B. A. Bednarcyk, K. C. Liu and S. M. Arnold
536. Analytical Damage Mechanics D. H. Cortes and E. J. Barbero
345. A Method to Determine the Shear Elastic Modulus in a Linearly Elastic and Incompressible Solid A. R. Aguiar and E. T. Prado

Thursday, Session TA20 (4:20-6:20) – Multi-scale Multi-physics in Granular Materials

696. A Micromechanical Constitutive Model of Dense Granular Assemblies considering Force Chain Buckling T. Matsushima and C. S. Chang
697. Muliscale Kinematics In Granular Media J. F. Peters and D. A. Horner
698. Micromechanical Studies on the Critical State of Granular Materials A. Anandarajah
699. Characterizing Tribo-Electric Charging and Adhesion for Granular Materials S. Johnson and O. Walton

Thursday, Session TA21 (4:20-6:20) – Solids and Structures

791. Finite Element Modeling of Bond For Reinforced Concrete Structures J. Li and L. N. Lowes
777. Characteristic Orthogonal Polynomials in the Study of Transverse Vibrations of Nonhomogeneous Rectangular Orthotropic Plates of Bilinearly varying Thickness R. Lal and Y. Kumar
772. Distortional Buckling:An Important Aspect for Short I-Beams A. Kumar
779. Contact Stress Analysis around Pin-Loaded Holes in Orthotropic Plates O. Aluko and H. Whitworth
790. Buckling of Thin Cylindrical Shells: Identification of Critical Length Scales of Random Imperfections Modeled as Random Fields K. Teferra and G. Deodatis
798. Simulation of Weld Line Movement during Forming of TWBs M. Ketabchi, M. Abbasi and M. Abbasi

Thursday, Session TA22 (4:20-6:20) – Sym. In Honor of Zdenek Bazant

829. Ductile-Brittle Transitions in Bundles of Time-Dependent, Weibull Fibers under Local Load Sharing S. L. Phoenix and W. I. Newman
951. Effect of Random Fields on the Mechanics of Systems at Multiple Scales J. Andrade and Q. Chen
824. Two-Level Multiscale Failure Model for Heterogeneous Materials C. Oskay and R. D. Crouch
834. Numerical Simulation of Blast and Penetration Effects on Structures G. Cusatis
836. Hygro-Thermo-Mechanical Interaction in Concrete Materials K. J. Willam
827. Formation of Multiple Shear Bands in Strain-Gradient Plasticity F. Dal Corso and J. R. Willis
837. Probabilistic Modelling of Fracture in Piezoelectric Ceramics M. A. Gutierrez and C. V. Verhoosel

Friday, Session FM1 (9:00-10:40) – Dynamics

360. Modeling of Eddy Current Damping due to a Permanent Magnet considering the Induced Magnetic Flux J.-S. Bae, J.-H. Hwang and J.-S. Park
382. Prediction of Dynamic Response of Stiffened Rectangular Plates using Hybrid Formulation S. Nayyeri and A. Esmaeily
378. Transfer Matrix Method for Dynamic Analysis of Rotor Systems with Coupled Support Stiffnesses K. Wang
379. Dynamic Performance of Long-Span Bridge under Different Traffic Conditions J. Wu and S. Chen
376. Mixed Perfectly-Matched-Layers for Direct Transient Analysis S. Kucukcoban and L. F. Kallivokas

Friday, Session FM2 (9:00-10:40) - Instability in Solids and Structures

455. Low Cycle Fatigue Failure Processes in Aluminum Foam M. D. Ingraham, K. A. Issen and D. J. Morrison
456. A Pressure-Dependent Energy-Based Yield Criterion for Cellular Solids M. Vural
444. Temporal Statistics in 3D dislocation Ensembles J. Deng, M. Mohamed and A. El-Azab
442. Real Time Experimental Research of Sandstone Permeability on condition of Temperature and Triaxial Pressure Z. Yuan, Z. YangSheng and K. JianRong
446. Statistical Averaging of Stress-Velocity Law using Dislocations Dynamics Modeling M. S. Mohamed, J. Deng and A. El-Azab

Friday, Session FM3 (9:00-10:40) – Mechanics of Advanced Materials and Structures

530. Damage and Failure Mechanisms in 2D Triaxial Braided Carbon Fiber Epoxy Composites L.W. Kohlman, W. K. Binienda and G. D. Roberts
539. Constitutive Modeling of a Twaron®/Natural Rubber Composite N. V. David and X.-L. Gao
540. An Inverse Material Characterization Method for the Lead Rubber Bearing Under Non-Uniform Cyclic Stress States G. Yun and A. F. Saleeb
529. Delamination and Crack Deviation in Laminated Composites X. Fang and Q. Yang
544. Integrated Vibro-Acoustic Strategy for Damage Detection of Composite Laminated Plates W. Fan, P. Qiao and M. Cao

Friday, Session FM4 (9:00-10:40) – Micromechanics of Materials

637. Some Perspectives on the Mechanics of Nanocrystalline Materials G. J. Weng
632. Compacting Sandstones through Dilatancy Y. M. Gueguen and J. Fortin
636. Notch Sensitivity and Fracture Resistance of Non-Woven Felts A. Ridruejo, C. González and J. LLorca
640. Entropy of Microstructure in Plasticity V. L. Berdichevsky
642. Infinite-Contrast Periodic Composites with Strongly Nonlinear Behavior: Effective-Medium Theory versus Fullfield Simulations M. Idiart, F. Willot, Y.-P. Pellegrini and P. P. Castaneda

Friday, Session FM5 (9:00-10:40) – Multi-Scale Behavior of Damage and Failure Mechanics

652. Size Effect on Strength and Lifetime Distributions of Quasibrittle Structures Implied by Atomistic Fracture Mechanics Z. P. Bazant, J.-L. Le and M. Z. Bazant
661. Elasticity and Strength of H-bonded Protein Domains: Geometric Confinement and Size Effects at Multiple Scales S. Keten and M. J. Buehler
657. A New Probabilistic Model for Damage in Ligaments Z. Guo and R. De Vita
663. Meso-Scale Computational Modeling of the Damage Response of Plain Concrete R. K. Abu Al-Rub and S.-M. Kim
658. Multiscale Modeling of Failure in Plates C. Oskay

Friday, Session FM 6 (9:00-10:40) – Nonlinear Oscillations and Instabilities of Advanced Structures

739. Nonlinear Vibrations of a Partially Fluid-Filled Cylindrical Shell P. B. Gonçalves, F. M. Silva and Z. Del Prado
743. On Chaotic Motions of a Nonideal System with (SMA) Considering the Dynamic of the DC Motor J. M. Balthazar, V. Piccirillo and I. S. Goes
742. Simulation of Railway Vehicle Hunting By Equalizing Frictional Dampers In Matlab Software S. A. A. Mirmohammadi, M. Reza Behi, H. Reza Behi and A. Yahyaie
738. Impact Damping of a Non-Ideal Motor/ Structure System: Optimization R. M. Brasil and M. A. Silva
740. Influence of Initial Stresses on the Nonlinear Vibrations of Circular Hyperelastic Membranes P. B. Gonçalves, R. M. Soares and D. Pamplona

Friday, Session FM7 (9:00-10:40) – Fluid Mechanics

841. Turbulence Simulations by Lagrangian Blocks V. H. Chu
408. Pressure drop of Fractal-Shaped Orifices in Turbulent pipe Flows A. M. Abou El-Azm Aly and F. Nicolleau
405. On Vortex Equilbria in Bounded Circular Domain G. Chamoun and M. Stremler
401. Topological Chaos in Wide Lid-Driven Cavities and Wide Microchannels J. Chen and M. A. Stremler
395. Vortex Breakdown in Axial Swirled Flow through a Vertical Tube M. H. Said Aly

Friday, Session FM 8 (9:00-10:40) – Multi-Scale Modeling and Characterization of Nano-Structured Polymer Composites

664. Mechanics of Near-Single-Crystal Thermoplastic Elastomers O. Lopez-Pamies, P. P. Castaneda and V. Racherla
477. DNA translocation kinetics in functional nanopores Y. Liu, A. Ramachandran and S. M. Iqbal
478. Multiscale Modeling of DNA-CNT and DNA-Graphene Complexes S. Zhang, J. Zou and W. Liang
667. Modeling of Three-Phase Bio-based Nanocomposites: Determining Bio-Resin Distribution in a RVE with Prescribed Thermo-Elastic Properties M. Haq and R. Burgueno
668. Tensile Behavior of Bio-based Nanocomposites: Modeling and Simulation through a Multi-Level FE Approach with Enhanced Three-Phase RVEs R. Burgueno and M. Haq

Friday, Session FM 9 (9:00-10:40) – Advanced Materials

285. A Local Thermodynamic Equilibrium Model of a Laser-Sustained Plasma in a Forced Argon Flow A. R. Nassar, R. Akarapu, J. A. Todd and S. M. Copley
500. Vibration Analysis of Commercial Thermal Barrier Coatings A. N. Palazotto, A. Deleon and L. Pearson
281. Assessing Service Induced Mechanical Deterioration of Aircraft Composite Materials Using Deterioration-Induced Wave Propagation A. Gupta and J. C. Duke, Jr.
284. Shape Optimization of Composites for Constrained Minimum Lagrangian using Homogenization P. P. Prochazka, V. Dolezel and K. Weiglova
631. Finite Element Analysis of Magnetoelectric Composite Structures E. Pan and R. Wang

Friday, Session FM 10 (9:00-10:40) – Mechanics of Biomembranes

917. A Coarse-Grain Model for Erythrocyte Membrane G. Lykotrafitis, J. Li and S. Suresh
572. Modeling the Dynamics of Red-Blood Cell Cytoskeleton-Membrane Interactions D. Kabaso, R. Shlomovitz, T. Auth, N. Gov and V. L. Lew
549. Adsorption of Flexible Macromolecules on Fluid Membranes: Theory and Biological Applications S. Tzlil and A. Ben-Shaul
547. Modeling Protein and Lipid Organization in Bacterial Membranes R. Mukhopadhyay, K. C. Huang and N. Wingreen

Friday, Session FM 11 (9:00-10:40) – Panel Discussion

838. Teaching Undergraduate Mechanics Courses: Presentation Color Codes and Hands-on Demonstrations J.-S. Pei, A. C. Hufnagel, P. B. Wijesinghe, M. Van Zandt, W. Tabet, R. C. Davis, E. C. Mai and R. D. Martin

Friday, Session FM 12 (10:50-12:30) –Multi-Scale Modeling and Multi-Scale Mechanics

679. A Multiscale Concurrent Atomistic/Continuum Theory And its Numerical Implementation J. D. Lee
676. Coarse-Graining Molecular Models for Solids: From Statics to Dynamics and From Zero Temperature to Finite Temperature X. Li
684. Validation of the Thermomechanical Atomistic-to-Continuum Model M. Kirca, W. He and A. C. To
673. Finite Strain Micromorphic Pressure-Sensitive Elastoplasticity R. Regueiro

Friday, Session FM 13 (10:50-12:30) – Nano-, Bio-, Cellular and Multi-Functional Materials

716. Carbon Nanotubes for Enhancing the Mechanical Properties of Cementitious Materials B. M. Tyson, R. K. Abu Al-Rub, A. Yazdanbakhsh and Z. Grasley
714. Thermo-Mechanical Properties of Nanoscale Thin Films A. Haque
710. Alpha-Helical Protein Filaments Unify Strength and Robustness Through Hierarchical Nanostructures M. J. Buehler, Z. Qin, S. Cranford and T. Ackbarow
709. Eshelby's Tensor for a Spherical Inclusion in a Finite Spherical Matrix Based on a Simplified Strain Gradient Elasticity Theory X.-L. Gao and H. Ma
717. Probe Tip Shape and Size Effects in Nanoscale Indentation Tests for Elastic and Viscoelastic Materials M. A. Graham, Z. C. Grasley and R. K. Abu Al-Rub

Friday, Session FM 14 (10:50-12:30) – Nano-Mechanics

728. Molecular Simulations of Clay Minerals under Static Loading Conditions J. Wang and M. Gutierrez
729. Molecular Dynamics Simulation of Electrical Field Induced Conformational Transition and Associated Frictional Performance of Monomolecular Films X. Ma and P. Shrotriya
730. Nano-Micro Fracture using Moment Tensor based on AE
731. Cooperative Buckling of Thick Multi-Walled Carbon Nanotubes Under Uniaxial Compression S. Zhang and X. Huang
732. Nanomechanics of Graphene Fracture S. Zhang, S. S. Terdalkar, S. Huang, H. Yuan, T. Zhu and J. Rencis

Friday, Session FM 15 (10:50-12:30) – Nonlinear Oscillations and Instabilities of Advanced Structures

943. Modeling and Performance Study of a Beam Microgyroscope M. Ghommem, A. H. Nayfeh, S. Choura, F. Najar, and Z.E.M. Abdel Rahman
736. Some Comments on the Nonlinear Dynamics Interactions Behavior of Electrostatically Actuated Microestructures J. M. Balthazar and J. L. Palacios Felix
741. Pull-in Retarding in Nonlinear Mathieu NEMS Resonators under Superharmonic Excitation N. Kacem, S. Hentz, S. Baguet and R. Dufour
744. Symmetry Breaking, Snap-through, and Pull-in Instabilities under Dynamic Loading of Microelectromechanical Shallow Arch K. Das and R. C. Batra
737. Suppressing Chaotic behavior in a Double-Well Oscillator with Limited Power Supply Using Electromechanical Damped Device J. M. Balthazar, J. G. Iossaqui and B. R. Pontes Jr.

Friday, Session FM 16 (10:50-12:30) – Stability of Solids and Structures

810. Buckling and Vibration of Rectangular Plates with Transverse Surface Cracks Y. Xiang, T. Attard and J. Yang
814. Web Local Buckling Analysis of FRP Structural Shapes P. Qiao and X. Huo
469. Finite Element Eigen-Buckling Guidelines for Thin Plates in Shear R. T. Naik and C. D. Moen
815. Equivalent Load Approach for Buckling Analysis of Tapered Members M. A. Serna and J. R. Ibañez
816. Imperfection Modeling for Thin-Walled Members V. M. Zeinoddini and B. W. Schafer

Friday, Session FM 17 (10:50-12:30) – Instability in Solids and Structures

447. Macroscopic Instabilities of Fiber Composites S. Rudykh and G. deBotton
454. Investigation of Third Invariant Dependence on Strain Localization in Porous Sandstone K. A. Issen
457. Effect of Topology and Morphology on the Deformation Mode of Cellular Solids M. Vural and M. Alkhader
452. Phonon Analysis of Carbon Nanotubes with Arbitary Chirality by the Objective Structures Framework K. Dayal and R. Elliott

Friday, Session FM 18 (10:50-12:30) – Multi-Scale Behavior of Damage and Failure Mechanics

656. A New Formulation for Multi-Scale Fatigue Damage Modeling Z. Lu and Y. Liu
659. Modeling Elasto-Plastic Fibrous Composite Material Behavior Using Meso-Scale Homogenization K. Acton and L. Graham-Brady
655. A Statistical Model for Damage Self-Sensing of Carbon-Fiber Reinforced Composites E. Sevkat, J. Li, F. Delale and B. Liaw
653. A Gradient Theory for Continuum Damage K. N. Solanki and D. J. Bammann
660. Top-down Multiscale Approach for Complex Damage Evolution in Composites Q. Yang and B. Cox

Friday, Session FM 19 (10:50-12:30) – Fluid Mechanics

402. An Efficient Model and Algorithm for Physiological Fluid Dynamics O. San and A. E. Staples
406. A Mathematical Model of the 2P Mode Vortex Wake A. S. Dozdabi and M. A. Stremler
407. Mixing Viscous Fluids using N-Rod Systems M. Gheisarieha and M. A. Stremler
417. The Parallelized Finite Element Method for Nearly Incompressible and Impermeable Porous Media M. Tak, T. Park and G. Z. Voyiadjis
418. Slamming Impact of Rigid and Sandwich Composite Hulls K. Das and R. C. Batra

Friday, Session FM 20 (10:50-12:30) – Mechanics of Materials

570. A Metric Theory of Large Deformation Generalized Plasticity V. P. Panoskaltsis, D. Soldatos and S. P. Triantafyllou
583. Characterization of Material Properties for a Random Chopped-Fiber Reinforced Composite Y. Pan and A. A. Pelegri
584. The Design and Impact Analysis of a UAV Landing Gear H. S. Turkmen and B. G. Tugay
574. Effects of Defect Presence on the Formation and Evolution of Adiabatic Shear Bands B. M. Love
567. Optimisation of Micro and Nano-Imprinting T. Balla and S. M. Spearing

Friday, Session FM 21 (10:50-12:30)) – Multi-scale Multi-physics in Granular Materials

700. Assessing Friction and Cohesion of Natural Porous Nanogranular Composites by Nanoindentation C. P. Bobko, B. Gathier and F.J. Ulm
701. Modeling the Permeability at Mesoscopic Scale B. Muresan, N. Saiyouri and P. Hicher
702. Particulate Flow Modeling with Distributed Lagrange Multiplier Technique Y. Kanarska, I. Lomov and T. Antoun
904. A Coupled Meshfree – Finite Element Multi-scale Formulation and Kernel Contact Algorithm for Modeling Soil-Machine Interaction J. S. Chen and P. Guan
575. Experimental Study of Kaolinite Particle Orientation Mechanism M. Hattab and J.M. Fleureau

Friday, Session FM 22 (10:50-12:30) – Interdisciplinary

463. Directional Solidification of a Binary Alloy in the Presence of a Foreign Particle L. Hadji
465. Wave Energy Focusing for Enhanced Oil Recovery C. Jeong, C. Huh and L. Kallivokas
466. Effect of Septh of Embedment on Bearing Capacity and Settlement of Prototype (1:3) Model Footing in Sand N. R. Patra and N. Adarshi
468. Exploring Efficiency in Reinforced Concrete with Topology Optimization G. S. Kamath, J. K. Guest and C. D. Moen
757. A Lumped Parameter Model of Failure Cascade Dynamics G. Sansavini, M. R. Hajj, I. K. Puri and E. Zio

Friday, Session FA1 (2:30-4:10) – Dynamics

377. Numerical Study of Energy Absorption Properties of Composite Sandwich Panels under Blast Loading H. Su and J. Righman McConnell
373. Dynamic Compaction of Porous Materials produced by a Shock Wave W. Nian and K. V. Subramaniam
367. Analytical Solutions to the Strain Rates in Reinforced Concrete Simply Supported Flexural Members to Blast Loads W. Sun
365. Optimal Design of a Simple Supported One-Way RC Slab against Blast Loads based on the Energy Approach W. Sun
366. Response of Reinforced Concrete Simple Supported members to Blast Loads W. Sun

Friday, Session FA2 (2:30-4:10) – Instability in Solids and Structures

461. Thermal Buckling and Inpact Resistance of Axially Loaded Lattice Structures H. Obrecht, U. Reinicke and M. Walkowiak
462. Thermal Post-Buckling and Vibration Characteristics of Composite Conical Shell Structures J.-H. Roh and S.-Y. Lee
458. Dynamic Collapse of Cylindrical Shells with Multiple Compartments L.-H. Lee, S. Kyriakides and K. Ravi-Chandar
453. Damage Propagation in Structures with Inner Instabilities A. Cherkaev, E. Cherkaev and L. Slepyan
448. Finite Volume Meshless Local Petrov-Galerkin Applied to Thin Beam Static Stability Analysis A. Khelil and R. Moosavi

Friday, Session FA3 (2:30-4:10) – Mechanics of Advanced Materials and Structures

522. Behavior of Concrete Slabs Strengthened with FRP M. Gamal I. Mahdy, A. Tahwia and A. El-bogdade
532. Repair of Concrete Beams Aged by Accelerated Corrosion using Externally Bonded CFRP Fabrics J. F. Davalos, G. C. Parish, A. Chen and I. Ray
534. Interfacial Stresses for Plated Beams Composed of Different Materials A. Chen, J. F. Davalos and F. S. Imani
542. Debonding Analysis of Flexural-Cracked Concrete Beams Externally Reinforced with FRP Plates F. Chen and P. Qiao
543. Mechanics of Interface Deformable Magneto-Electro-Elastic Layered Structures F. Chen and P. Qiao

Friday, Session FA4 (2:30-4:10) – Mechanics of Pavements and Paving Materials

946. Challenges for Pavement Mechanics C. Schwartz
613. Modeling Fracture and Failure of Nonlinear, Inelastic Asphalt Concrete Mixtures T. Francisco and Y.-R. Kim
603. Surface Loading of A Multilayered Viscoelastic Pavement: Moving Load Y. Chen and E. Pan

Friday, Session FA 5 (2:30-4:10) – Micromechanics of Materials

646. Identification of Microstructural Information from the Effective Properties of Composite E. Cherkaev, C. Bonifasi-Lista and D. Zhang
641. Incremental Compliance and Resistance of Contacts on a Rough Interface: Implications of the Crossproperty Connection M. Kachanov and I. Sevostianov
633. Effect of Induced Intra-Granular Slip Bands on the Plastic Behavior of Polycrystals C. Collard, S. Berbenni, V. Favier and M. Berveiller
634. Micromechanical Modelling of Isotropic Viscoelastic Behavior of Composites: Translated Field Approach S. Berbenni, D. P. Do, G. Albert and D. Hoxha
639. Self-Consistent Methods of Homogenization based on Numerical Solutions of the One-Particle Problems K. Sergey

Friday, Session FA 6 (2:30-4:10) – Computational Methods for Modeling and Quantification of Structural Flaws

351. Interactions of Multiple Inhomogeneous Inclusions in a Half Space: Method and Application K. Zhou, L. M. Keer and Q. J. Wang
352. Topology Optimization of Continuum Structures considering Fabrication Flaws A. Asadpoure, J. K. Guest and T. Igusa
923. Viscoelastic Fracture of Hydrogel Materials G. Tizard, K. Murray, W. Kim, and D. Dillard
918. A Combined Cohesive-Continuum Formulation for Ductile Fracture K. D. Papoulia
927. Simulation of Impact Behavior of Composite Materials using Thermodynamically Consistent Coupled Viscoplastic Damage Model G. Z. Voyiadjis and B. Deliktas

Friday, Session FA 7 (2:30-4:10) – Fluid Mechanics

385. Velocity Measurements in the Meander Bend of a River J. E. Petrie, P. Diplas, M. Gutierrez and S. Nam
398. Coherent Structures in Flow through Emergent Vegetation using Boroscopic Particle Image Velocimetry S. A. Socolofsky, K. A. Whilden, D. B. Bryant, J. Bandas and A.Kidwell
389. Swirling Strength based Identification of Vortices in Shallow Wake A. Singha and R. Balachandar
394. Numerical Study of Erosion-proof of Loose Sand in an Overtopped Plunging Scour Process G. Wang
925. Development and Mixing of Turbulent Thermohaline fountains R.E. Baddour and H. Zhang

Friday, Session FA 8 (2:30-4:10) – Multi-Scale Modeling and Multi-Scale Mechanics

693. Dynamic Simulation of Dislocations and Shear Bands with Multiple Resolutions L. Xiong and Y. Chen
689. Connecting Length Scales with Peridynamic Mechanics S. A. Silling, R. B. Lehoucq and M. L. Parks
686. Concurrent Atomistic-Continuum Simulation of Multiscale Dynamic Materials Behavior Y. Chen and L. Xiong
690. Onset of Cavitation in Hyperelastic Solids under Arbitrary 3D loading Conditions O. Lopez-Pamies and M. I. Idiart
691. Peridynamics as a Mesoscale Limit of a Crystal Lattice K. Dayal

Friday, Session FA 9 (2:30-4:10) – Mechanics of Materials

566. Fracture Behavior of AISI304 Steel Welded Plates: An Experimental and Finite Element Analyses E. Goncalves and M. A. Calle
593. Comparative Predictions of Slip-Systems Hardening Inequalities and a K. Havner
597. Fundamental Studies of Stress Corrosion Cracking in Iron from DFT H. H. Pham and T. Cagin
596. Getting Proper Condition of Laser Welding of TWBs to Investigate Effects of Forming Parameters on their Formability M. Ketabchi, M. Abbasi and M. A. Shafaat
594. A Comparison Study of the Energy Absorption Performance of Square AA6061-T6 Aluminum Extrusions with Two Formats of Discontinuities. J. Pathak

Friday, Session FA 10 (2:30-4:10) – Fluid Mechanics

399. Labboratory Generation of Solitary Waves S. Malek-Mohammadi and F. Y. Testik
412. Wave Propagation Prediction in Homogeneous Materials Using Hybrid Lattice Particle Modeling G. Wang, A. Al-Ostaz, A.H.-D. Cheng and P. R. Mantena
415. Linear Stability Analysis of Modified Taylor-Couette Flow Y. Aboelkassem and A. E. Staples
391. Wave Propagation and Induced Steady Streaming in Viscous Fluid Contained in a Prestressed Viscoelastic Tube Y. Ma and C.-O. Ng
840. Internal-Wave Radiation on Horizontal Turbulence in Stratified Flow V. H. Chu and C. E. Pinilla

Friday, Session FA 11 (2:30-4:10) – Probabilistic Methods

354. Polynomial Chaos Expansions for Stochastic Optimal Control of Duffing Oscillators Y. Peng, R. Ghanem and J. Li
359. A Numerical Method for Integrating Stochastic Differential Equations with Poisson and Levy White Noise M. Grigoriu
307. Uncertainty Quantification in Model- Based Damage Diagnosis S. Sankararaman and S. Mahadevan
472. Uncertainty Quantification in Hierarchical Computational Models using Bayes Networks A. Urbina and S. Mahadevan
372. Probabilistic Framework for Condition Assessment B. Choi

Friday, Session FA 12 (4:20-6:20) – Dynamics

848. Blast Resistance of Unreinforced Masonry (URM) Walls Retrofitted With Nano Reinforced Elastomeric Materials M. Irshidat, A. Al-Ostaz, A. Cheng and C. Mullen
363. An Unconditionally Stable Explicit Integration Algorithm with Controllable Numerical Damping C. Chen and J. Ricles
375. Shape Control of Thin Shell under Thermal Stress using Laminated Piezoelectric Actuators Y.Yang, Z. Xinong and X. Shilin
357. Decentralized Control of Large-Scale Web Winding Systems W. Zhou
353. On Controllability of Structures with Closely Spaced Natural Frequencies based on Perturbation Analysis F. Xie and L. Sun
369. A New Formulation for Rotational Dynamics F. Udwadia and A. D. Schutte
849. A Thermoplastic Damage Model with Application to Cyclic Loading of Metallic Plate Dampers D. Kim and G. F. Dargush

Friday, Session FA 13 (4:20-6:20) – Geomechanics and Elasticity

421. Study of the Soil-Structure-Pore Water Interaction of the Breached Levee System at the 17th Street Canal of New Orleans J. Wang and M. Castay
944. A Fundamental Platform for Dynamic Soil-Structure Interaction be Linearized Theory R. Pak and J. Ashlock
422. Shakedown of Pavements under Moving Surface Loads: Revisited J. Zhao
426. Two-Dimensional Approximation to Static Three-Dimensional Elasto-Plastic Soil-Pile Interaction Problem A. Anandarajah
425. Numerical Simulation Of Liquefaction Effects To Structures Subjected To Earthquake Thao Nguyen Huynh Huu
423. Liquefaction Earthquake Site Response Analysis Of Layered Soil Deposits Using Viscoplasticity Models Thao Nguyen Huynh Huu
429. A New Rheological Soil Model For Liquefaction Analysis Thao Nguyen Huynh Huu

Friday, Session FA 14 (4:20-6:20) – Material Response to Shock Loading

485. Inertial Effects in Numerical Simulations of Hopkinson Bar Tests on Nearly Incompressible Soft Materials M. Scheidler, M. Raftenberg, B. Love and R. Kraft
486. Structures and Deformation Mechanisms of the á-Al/Ù and á-Al/è? Interfaces in Al-Cu-Mg-Ag Alloys: A First-Principles and Molecular Dynamics Simulation Study L. Sun, M. Zikry and D. W. Brenner
487. High Strain Rate Deformation and Melting of Single Asperity Electrical Contacts D. L. Irving
488. Predicting Mesh-Independent Ballistic Limits for Heterogeneous Targets by a Nonlocal Damage Computational Framework R. K. Abu Al-Rub and S.-M. Kim
489. Atomic-Level Simulations of Photomechanical Damage and Laser Spallation L. V. Zhigilei, E. Leveugle, D. S. Ivanov, Z. Lin and E. Abdul Karim
490. Hot Electron Pressure in Short Pulse Laser Interaction with Metals Z. Lin, R. Allen and L. V. Zhigilei
915. High Strain Rate Deformation of Ultra-Fine Grain Sized Nanocrystalline Cu A. M. Dongare, A. M. Rajendran, B. LaMattina, D.W. Brenner, and M.A. Zikry

Friday, Session FA 15 (4:20-6:20) – Mechanics of Pavements and Paving Materials

947. Achieving Enhanced Understanding of Flexible Pavement Distress Mechanisms through the Use of Advanced Models R. Roque
609. Damaged Viscoelastic-Viscoplastic Model for Asphalt Concrete Mixes M. A. Graham, R. K. Abu Al-Rub, E. A. Masad and D. N. Little
611. Predict Stiffness of Asphalt Concrete using the Strain Concentration Factor Y. Liu and Z. You

612. Three-dimensional Discrete Element Simulation of Asphalt Concrete using Frequency-temperature Superposition Z. You, Y. Liu, Q. Dai and S. Adhikari

Friday, Session FA 16 (4:20-6:20) – Molecular Mechanics

647. Multiscale modeling of Interfacial Thermal Transport G. Balasubramanian and I. K. Puri
725. Thermal Properties at Nanoscale X. Wang and J. D. Lee
648. Dynamics of Nanojet Collision G. Balasubramanian, I. K. Puri and S. A. Ragab
649. Computational Scattering Experiments on Atomistic Material Models F. Campo and E. J. Barbero
650. Molecular Dynamics Studies of Interfacial Separation in Carbon Nanotube Polymer Composites with Bond-breaking A. P. Awasthi and D. C. Lagoudas
651. Mechanical Properties of Silica Aerogel by Molecular Dynamics J. S. R. Murillo and E. J. Barbero

Friday, Session FA 17 (4:20-6:20) – Shape Memory Alloys

767. Intragranular Austenite Orientation Evolution of a Cu-Al-Be SMA during an In-Situ Tensile Test S. Berveiller, B. Malard and E. Patoor
762. Effect of Irrecoverable Strains on the Martensitic Transformation of TiPdNi High Temperature Shape Memory Alloy P. Kumar and D. C. Lagoudas
766. Transformation Induced Fatigue Life of Nickel-Rich NiTi SMA Actuators: Failure Mechanisms and Investigations of the Interactions Precipitates/Matrix upon Cyclic Transformation O. W. Bertacchini, J. Schick, H. Zheng and D. C. Lagoudas
905. Development of Nickel-Free Shape Memory Alloys for Biomedical Applications P. Laheurte, W. Elmay, A. Eberhardt, T. Gloriant, F. Prima, and E. Patoor
907. Investigation of the Interface in NiTi Shape Memory Fibre-Epoxy Matrix Composite Y. Payandeh, F. Meraghni, E. Patoor, and A. Eberhardt
759. Analyses and Evaluations for Composite Moment Frames with SMA PR-CFT Connections T. Park and J. W. Hu
760. Application of Shape Memory Alloy as an Energy Dissipater in Civil Engineering S. M. Zahrai and M. J. Hamidia

Friday, Session FA 18 (4:20-6:20) – Fluid Mechanics

388. Turbulent Structures in Turbulent Round Jet: Effect of the Reynolds Number R. Balachandar and V. Roussinova
404. Threshold of Sediment Movement under Turbulent Flow Conditions A. O. Celik, P. Diplas, C. Dancey and M. Valyrakis
409. Study on Effect of Seepage on Rough Open Channel Flow through Proper Orthogonal Decomposition (POD) A. Faruque, A. Singha, T. Jiahao and R. Balachandar
386. Simulation of Small Scale River Morphodynamics using Discrete Particle Models M. Valyrakis, P. Diplas, C. Dancey and A. O. Celik
291. Influence of Riverbed Protection on Characteristic of Bored Piles Built in Deep Water S. Chen, Z. Chen, Y. Tang and Q. Chen
839. Magnetohydrodynamics of Viscoelastic Fluid over a Stretching Surface with Suction within a Porous Medium A. Chan, U. Mahabaleswar and P. Siddheshwar
403. Experimental Investigation of Junction Flow around a Cylinder using PIV Measurements N. Apsilidis, S. G. Raben, P. Diplas, C. L. Dancey and P. Vlachos

Friday, Session FA 19 (4:20-6:20) – Mechanics of Materials

585. Multiscale Modeling of Polyether Polyurethane Foams T. Sabuwala, X. Dai and G. Gioia
591. Cell Wall Stiffness, Geometric Uncertainty, and the Elastic Properties of Cellular Networks S. Arwade and B. W. Schafer
515. Sliding Interfaces: NEMD Simulations and Theoretical Models J. E. Hammerberg, T C. Germann, B. L. Holian and R. Ravelo
573. Longitudinal Vibration of Conical Bishop Rod
561. Numerical Study of Erosion of Loose Sand from an Overtopped Plunging Jet G. Wang, C. R. Song, J. Kim and A.H.D. Cheng
310. A Primal Interface Formulation for the Coupling of Nonconforming Meshes in the Presence of Large Deformations G. Haikal and K. Hjelmstad

Friday, Session FA 20 (4:20-6:20) – Advanced Materials

507. Study on Crack Resistance of Steel Fiber Reinforced Concrete Q. Ren and S. Wang
509. A New Experimental Method for Quantifying the Shrinkage Cracks in Concrete A. N. Ababneh and M. A. Sheban
512. Influence of Basalt Fiber on Performance of Cement Mortar C. Jiang and T. McCarthy
491. Use of FRP Composites to Strengthen Concrete Structures S. Aldajah, A. Biddah and A. AL-Omari
492. Performance and Characterization of Two Water-Proof Crystalline Concrete Systems A. H. Al-Gadhib, M. H. Baluch, M. K. Rahman and N. S.Saleem
493. Effect of Elevated Temperture on Fracture Properties of Concrete M. Gamal I. Mahdy, M. A. Imam and A. I. Elsherbiny
494. Effect of Strengthening with CFRP on Fracture Properties of Concrete M. Gamal I. Mahdy, M. A. Imam and A. I. Elsherbiny

Friday, Session FA 21 (4:20-6:20) – Solids and Structures

792. A Microstructure-based Continuum Theory for Multiphase Solids F. Vernerey
799. Evaluation of the 3D Anisotropic Elastostatic Fundamental Solution by Using the Telles Transformation A. G. Santiago, P. Sollero and E. L. Albuquerque
794. Straight Fold Models for Axial Crushing of Thin Walled Frusta and Tubes S. Haider, M. Hosseini, T. Naqvi and H. Abbas
780. A Newly Developed Cruciform Specimens Geometry for Biaxial Stress Evaluation Using NDE M. A. Mustafa
301. A Study on the Performance Evaluation of Lightweight Unit Panel using Honeycomb Structure G. Lee, D.-H. Song, H.-C. Lee and S.-S. Go
782. Predicting Cutting Temperatures When Turning Stainless Steel With Worn Tools C.-S. Chang
956. Forming Limit Measurement in Tube Hydroforming: Hardness Distribution Approach C.P. Lai

Friday, Session FA 22 (4:20-6:20) – Stability of Solids and Structures

811. Non-Linear Behavior and Failure of FRP Composite Closed-Section Thin-Walled Beams N. Silva, N. Silvestre and D. Camotim
804. Edge Effects in Buckled Thin Films on Elastomeric Substrates J. Song, Z. Liu and Y. Huang
813. A Fat Simulation Tool for Buckling and Postbuckling Analysis of Composite Structures J. Xu
817. FSM and cFSM Stability Analysis for General Boundary Conditions Z. Li and B. W. Schafer
939. Numerical and Analytical Investigations of Bearing Behavior in Thin Walled Steel Bolted Connection at Elevated Tempatures H. He and Y. C. Wang
921. Plastic Flow with Microstructural Evolution and its Effect on Strain Localization J.L. Bassani and H. Pan
919. Interaction During Tunneling J. Boštík and K. Weiglová

Saturday, Session SM1 (9:00-10:40) – BioMechanics

326. Random Fiber Networks Are Stochastic Fractal Objects H. Hatami-Marbini and C. Picu
327. A Mechanism for Atherosclerotic Plaque Rupture by Marticle/Matrix Interfacial Decohesion C. M. Nguyen and A. J. Levy
328. A New Indentation-Based Creep Test for Multi-scale Mechanical Characterization of Biological Membranes K.-K. Liu, M. Ahrearne and K.-T. Wan
330. Hyperelastic Contact Models for the Indentation of Cells and Extracellular Matrix D. C. Lin, E. K. Dimitriadis, D. I. Shreiber and F. Horkay
331. Biomechanical Analysis of the Accommodation Process of Human Eyes J. D. Lee, J. Chen and O. L. Lee

Saturday, Session SM2 (9:00-10:40) – Materiomics-Materials Science of Biological Protein Materials

517. A New Molecular Mechanism of Fracture Toughness of Nacre Y. Wang and Y. Chen
518. Micromechanisms of Deformation of Collagen Fibrils under Uniaxial Tension R. Ballarini, Y. Tang, M. J. Buehler and S. J. Eppell
519. Dissecting Molecular Mechanics in Different Binding Behaviors of Inhibitors to HIV-1 Protease with Coarse-Grained Molecular Dynamics Simulations B. Ji
520. Molecular and Mesoscale Mechanisms of Osteogenesis Imperfecta Disease M. J. Buehler and S. Uzel

Saturday, Session SM3 (9:00-10:40) – Multi-Scale Modeling and Multi-Scale Mechanics

674. Peridynamics as an Upscaling of Molecular Dynamics P. Seleson, M. L. Parks, M. Gunzburger and R. B. Lehoucq
678. Mesoscale Simulations with Microscale Tools: Peridynamics in a Molecular Dynamics Code M. L. Parks, R. B. Lehoucq, S. J. Plimpton and S. A. Silling
680. Simulation of Wave Propagation by a Multiscale Field Theory X. Wang and J. D. Lee
681. A Multiscale Modeling of Dynamic Crack Propagation J. Chen, X. Wang, H. Wang and J. D. Lee
683. Finite Element Methods for a Peridynamic Model of Mechanics X. Chen and M. Gunzburger

Saturday, Session SM4 (9:00-10:40) – Mechanics of Biomembranes

920. Probing Cell Membrane Fluctuations with Light G. Popescu
548. Modeling Vesicular Exocytosis using Boundary Integral Method T.-H. Fan
332. Biorheology of Red Blood Cells via Dissipative Particle Dynamics I. V. Pivkin, D. J. Quinn, M. Dao, G. E. Karniadakis and S. Suresh
550. Coarse-Grained Molecular Dynamics Simulations of Shape Transitions of Red Blood Cells H. Yuan, C. Huang, J. Li and S. Zhang

Saturday, Session SM5 (9:00-10:40) – Mechanics of Pavements and Paving Materials

606. 3D Aggregate Characterization for Modeling and Simulation of Mixture Properties L. Wang, and E. Tutumluer
948. Study of Indirect Tension Strain Based on Digital Speckle Correlation Method Y. Tan
610. Viscoelastic Analysis of HMA Beams using Discrete Element Modeling S. Adhikari, Q. Dai, Y. Liu and Z. You
605. Atomistic Modeling of Bitumen-Stone Interface under Tensile Loading Y. Lu and L. Wang
602. A Multi-scale Study on the Fatigue Properties of Asphalt Mixture, Binder and Mastics D. Wang and L. Wang

Saturday, Session SM6 (9:00-10:40) – Proper Orthogonal Decomposition Methods in Dynamical Systems

470. Physics Based Galerkin Model Reduction Tools for Fluid Flow Systems G. Tadmor, B. R. Noack, M. Schlegel and M. Morzynski
853. Improvement of the POD ROM Robustness using Optimal Sampling M. Bergmann
854. An Adaptive POD-Krylov Reduced-order Modeling Framework for Repeated Analysis Problem K. Calberg and C. Farhat
855. Reduced-order Model of the Velocity Field of a Micro-air Vehicle Hover Motion C. Chabalko, P. Beran, R. Snyder, and M. R. Hajj
857. Using Low-order Models to Assess Turbulent Convective Heat Transfer Effectiveness M. Schwanen and A. Duggleby

Saturday, Session SM7 (9:00-10:40) – Multi-Scale Behavior of Damage and Failure Mechanics

662. Influence of Carbon Nanotubes on Interlaminar Fracture of Carbon-Fabric/Epoxy Composites P. R. Thakre and D. C. Lagoudas
654. Anisotropic Elastoplastic and Damage Behavior of Composite Sheets D. Skolnik, H. Liu and L. Sun
903. Multi-Scale Modeling for Nanoparticle Reinforced Polymer Composites S.H. Pyo, G. Lemaire and H.K. Lee
952. Modeling of Lamb Waves for Application to Crack Identification E. Palmos, Y. W. Kwon, and R.D. Pollak

Saturday, Session SM8 (9:00-10:40) – Mechanics of Phase Transformations

619. A Boundary Element Method Coupled to Phase Field to Compute Ferroelectric Domains in Complex Geometries K. Dayal and K. Bhattacharya
620. Dynamic Simulation of Pressure Induced Phase Transformation of Covalent Materials by a New Coarse Graining Methodology L. Xiong and Y. Chen
621. Continuum Mechanics of Rechargeable Batteries and the Effect of Elastic Energy Barrier on the Speed of Charge/Discharge F. Roumi and K. Bhattacharya
617. Phase Fronts in Nickel-Titanium under Cyclic Mechanical Loads K. Kim and S. Daly
618. Temperature Effects on Piezoelectric Cyrstals Y. Cao and J. Li

Simulation J. Favier, P. Naude, R. D. LaRoche and M. Cook

Saturday, Session SM9 (9:00-10:40) – Mechanics of Materials

578. Weibull Analysis of Loading Rate Effect on Deformation Behaviour and Toughness of ABS J. Xu and B. Jar
590. Peeling Mechanics of Extensible Elastic Adhesive Tapes C. Kovalchick, A. Molinari and G. Ravichandran
579. Effect of K-Dominance Zone Size on Brittle Fracture B. Kumar, S. Chitsiriphanit and C.T. Sun
599. The Recovery of Stress Softening and Mullins Effect of a Nanoparticle-Filled Polymer L. Yan, D. A. Dillard and R. L. West
957. Predicting Life of Acrylic Foam Tapes for Structural Glazing Applications subject to Representative Wind Load Scenarios B. Townsend, D. H. Ohanehi, D. A. Dillard

Saturday, Session SM10 (9:00-10:40) – Soil-Machine Interactions and Particle Fluidized Interaction

745. Erosion and Dispersion of Soils by Water: Comparison between Two Tests C. Chevalier, M. Duc, S. Guedon, T. L. Pham and P. Reiffsteck
746. A Proposed New Method of Analysis for Two Erodimeters P. L. Regazzoni, D. Marot and T. Wahl
747. Erosion-Induced Deformations in Soils P. Y. Hicher and C. S. Chang
748. A Granulometric Study of Internal Erosion Mechanisms B. Muresan, A. Guefrech and N.Saiyouri
769. Computational Modeling of Lunar Sand Behavior for Traction Analysis M. K. Orr, B. Ananthasayanam, J. D. Summers, P. F. Joseph and S. B. Biggers, Jr.
770. Modeling Full-Scale Operation of Earth-Moving Machinery using Coupled Particle Dynamics, Machine Dynamics and Hydraulic Control

Saturday, Session SM11 (9:00-10:40) – Probabilistic Methods

464. Reliability Analysis for General Systems by Sequential Compounding Method W.-H. Kang and J. Song
475. Representation, Aggregation and Propagation of Aleatory and Epistemic Uncertainty in Probabilistic Framework K. Zaman, M. McDonald, S. Rangavajhala and S. Mahadevan
928. Nonlinear Stochastic Modeling of Composites using the Energy-based Characterization J. W. Pan and T. Furukawa
902. Seismic Response of Steel-Concrete Composite Bridges Accounting for Model Parameter Uncertainties E. Tubaldi, M. Barbato, and A. Dall'Asta

Saturday, Session SM12 (10:50-12:30) – Micromechanics of Materials

643. New Bounds for Effective Properties of Multimaterial Composites and Optimal Microstructures A. Cherkaev and Y. Zhang
635. Heat Conduction and Deformations of Viscoelastic Functionally Graded Materials K. A. Khan and A. H. Muliana
638. A MEMS Based Tensile Stage and a Microscale Specimen with Self-Aligning Mechanisms for Uniaxial Tensile Testing W. Kang, J. H. Han and T. Saif
644. Failure Initiation in PZT Sol-Gel Thin Films T. A. Berfield and N. R. Sottos
645. Effect of Clusters of Microcracks and Pores on the Statistics of Peak Stress and Overall Properties of Porous/Microcracked Material I. Sevostianov

Saturday, Session SM13 (10:50-12:30) – Multi-Scale Modeling and Characterization of Nano-Structured Polymer Composites

669. Elastic Constants and Coefficients of Thermal Expansion for Toughened Epoxynanotube Composites from Molecular Dynamics Simulation S .J. V. Frankland and T. C. Clancy
670. Effect of Single Wall Carbon Nanotubes on Mechanical and Electrical Properties of Unidirectional Carbon-Fiber/Epoxy Matrix Composites P. R. Thakre and D. C. Lagoudas
671. Electrical and Thermo-mechanical Characterization of Carbon Nanotube Reinforced Toughened Epoxy Nanocomposites D. C. Lagoudas, P. J. Klein, P. R. Thakre and J. Zhu
672. Mechanical Characterization and Constitutive Modeling of Polyurethane-Montmorillonite Nanocomposites A. Kaushik, E. Arruda, A. Waas, P. Podsiadlo, N. Kotov and M. Qin
665. Micromechanics Modeling of Carbon Nanotube-Epoxy Nanocomposites and Unidirectional Hybrid Laminates: Summary of Elastic, Thermal and Electrical Properties with Emphasis on Coefficient of Thermal Expansion G. D. Seidel
666. Atomistic Simulations of Properties of Polymer Nanocomposites T. Clancy and S. Frankland

Saturday, Session SM14 (10:50-12:30) – Multi-Scale Modeling and Multi-Scale Mechanics

677. Microscopic Origins of Continuum Balances and Peridynamics R. B. Lehoucq
675. Implementation of Higher Order Basis Functions in the Multiscale Finite Element Method for Elliptic Problems S. Soghrati and I. Stanciulescu
685. Quantum Mechanics to Mechanics: Electronic structure calculations at macroscopic scales Balachandran Gr and V. Gavini
682. A New Constitutive Theory for Fiber-Reinforced Rubber-like Materials M. I. Idiart and O. Lopez-Pamies
687. A Computational Framework for Multiscale Analysis of Laminated Composite Plates H. M. Mourad, T. O. Williams and F. L. Addessio

Saturday, Session SM15 (10:50-12:30) – Nano-Structured Materials Multi-Scale Modeling and Simulation

715. In-Situ TEM Studies of Size Effects in Thin Films A. Haque and S. Kumar
705. Molecular Dynamics Simulations of Graphite ?Vinyl Ester Nanocomposite and Its Constituents H. Alkhateb, A. Al-Ostaz, A. Cheng and P. Raju Mantena
703. Wave Propagation Prediction in Homogeneous Materials Using Hybrid Lattice Particle Modeling G. Wang, Sr.
704. Continuum Modeling of Boron Nitride Nanotubes J. Song and Y. Huang
922. Effects of Material Anisotropy on Aggregation Q. Shi and J. L. Bassani

Saturday, Session SM16 (10:50-12:30) – Proper Orthogonal Decomposition Methods in Dynamical Systems

471. POD-Galerkin Reduced-Order Models for Real-Time Surgical Simulation A. Hay, M. Audet, J.-P. Marcotte and J.-F. Hetu
414. Gust Effects on Flow and Pressure Distribution over a Cylinder M. Ghommem, I. Akhtar, M. R. Hajj and I. K. Puri
858. Reduced-order Modeling of Turbulent Flows T. Iliescu, J. Borggaard, I. Akhtar, and Z. Wang
856. Application of Proper Orthogonal Decomposition in Computing Functional Gains I. Akhtar, J. Borggaard, J. Burns, and L. Zietsman

Saturday, Session SM17 (10:50-12:30) – Impact-Blasting-Penetration of Granular Materials

432. Simulation of High-velocity Penetration for Rigid Projectile into Plain Concrete Target using Discrete Element Method Y. Zhou and L. Wang
435. Modeling Impacting Micropolar Bodies C. L. Randow and G. A. Gazonas
434. DEM Simulation of Erosion Mechanism for Semi-rigid base using PFC3D Y. Sheng, S. Chen and L. Wang
433. Asphalt Mixture Fatigue Evaluation Using X-Ray Tomography and Finite Element Simulation C. Wan, X. Zhang and L. Wang

Saturday, Session SM18 (10:50-12:30) – Mechanics of Phase Transformations

614. Mesoscopic Theory of Ferromagnetic Shape Memory Alloys J. Li and L. Li
615. The Kinetics of 90-degrees Domain Switching in Ferroelectric Crystals at the Individual Domain level: Subprocesses and their Kinetic Laws D. Shilo, Y. Abu and E. Faran
616. Modeling of Ferromagnetic Shape Memory Composites L. Liu
309. Phase Field Theory and Model of Dislocation Dynamics and Networks D.-W. Lee and M. Koslowski

Saturday, Session SM19 (10:50-12:30) – Fluid Mechanics

393. Solution of Pipe Network with Conjugate Gradient Method E. Mendi
397. Flow of Non-Homogenous Incompressible Fluids S. K. Hajra and M. Massoudi
400. Experimental Analysis of Similarity in Velocity Profile of Salt Solution Density Current E. Safaei, V. Hatamipour and B. Firoozabadi
416. Aerodynamic Performance of Stepped Airfoil M. Boroomand and S. Hosseinverdi
521. Waste Heat Recovery in a Refrigerant Restaurant M. Sadi
410. Purging of Negatively Buoyant Tracer from Rectangular Cavities in Oscillating Grid Turbulence
955. Chaotic Advection in Pulsed Source-Sink Systems P. Kumar and M. Stremler

Saturday, Session SM21 (10:50-12:30) – Rate Dependent Behavior of Granular Materials

752. Optimal Control of Electrostatic Self-Assembly of Binary Monolayers N. V. Shestopalov, G. Henkelman, T. Powell and G. J. Rodin
753. Micromechanical Model of Interfaces with Rate-Dependent Asperity Contacts A. Misra
754. A Strain-rRate Based Micromechanical Model for Soft Soils C. S. Chang, Z. Y. Yin and P.-Y. Hicher
755. A Visco-Elastic Wedge Driven by A Sudden State-Dependent Frictional Slipage: Application to Wenchuan Earthquake K. T. Chau

Saturday, Session SM22 (10:50-12:30) – Predictability of Quantum to Continuum Simulations

818. Improvement of Segmented Constrained Layer Damping on a Large Frequency Range using Simplex Method G. Lepoittevin
819. Stress Constrained Continuum Structural Topology Optimization via Genetic Algorithms J. K. Guest and L. C. Smith Genut
820. Controlling Feature Geometry in Topology Optimization J. K. Guest
545. Vibration-Based Damage Identification Methods for Beam/Plate-Type Structures W. Fan and P. Qiao
940. Fatigue Reliability of Composite Laminates under Multiaxial Loading Y. Ziang and Y. Liu

Saturday, Session SA1 (1:50-3:50) – Biomechanics

333. Matrix Rigidity Mediates Growth Factor Response During 3D Endothelial Cell Sprouting A. Shamloo and S. C. Heilshorn
334. Dynamic mechanical response of kidney tissue under compression: Strain-rate effect W. W. Chen and F. Pervin
336. Unfolding of DNA and Proteins under Axial Loading: An Interface Propagation Approach R. Raj and P. K. Purohit
337. Guiding Principles of Nanoparticle Uptake by Biological Cells S. Zhang, H. Yuan, J. Li, G. Lykotrafitis, G. Bao and S. Suresh
338. A Constitutive Law Characterizing the Material Response of Insect Tracheae F. M. Davis, R. De Vita and J. Socha
344. Elucidating Soft Tissue Remodeling Utilizing a Structural Constitutive Model - Application to the Urinary Bladder Wall S. Wognum and M. S. Sacks

Saturday, Session SA3 (1:50-3:50) – Predictability of Quantum to Continuum Simulations

749. Local Band Edges of Strained Quantum Dots in Half-Space Substrates E. Pan, Y. Zou, P. W. Chung and J. D. Albrecht
750. Three-Dimensional InAs/GaAs Quantum Dots Size and Density Study using Kinetic Monte Carlo Simulation E. Pan, M. Sun and P. Chung
751. Elasto-Plastic Analysis of Functionally Graded Spheres Y. Amirirad, A. Niknami and S. Jahangiri
787. An Augmented Lagrangian Treatment for Viscoelastic Contact Formulation H. Ashrafi

Saturday, Session SA4 (1:50-3:50) – Multi-Scale Modeling and Multi-Scale Mechanics

688. A Multiscale Model for Martensitic Transformations and Accompanying Plasticity in Metastable Austenitic Materials F. Roumi and K. Bhattacharya
692. Role of the Defect-Core in Energetics of Vacancies: An Electronic-Structure Study V. Gavini
694. Variability of Strength in Brittle Materials with Randomly occurring Flaws and Pores L. Graham-Brady and C. Zingale
695. Investigation of a Mathematical Model for Surface Roughness of Surface Produce in High Speed and Ultra High Speed Milling of Gamma Titanium Aluminide Based on Empirical Tests S. Kolahdouz and B. Arezou

Saturday, Session SA5 (1:50-3:50) – Multi-Scale Behavior of Damage and Failure Mechanics

909. Investigation of Behavior of Cracked Beam Members after Earthquakes A. Korkmaz and F. Demir
953. Damage Detection in Non-Uniform Thickness Laminated Composite Beams using Vibration based Health Monitoring Technique H. Ghaffare, A. Zabihollah and E. Saeedi
954. Damage Detection in Multi-Stable Laminated Composites using Vibration based Health Monitoring Technique H. Ghaffare, A. Zabihollah and E. Saeedi
756. Investigation of the Nuclear Gauge Density Calibration Method H. Yin and Z. Luo

Saturday, Session SA6 (1:50-3:50)

Saturday, Session SA7 (1:50-3:50) – Innovative Instrumentation and Experimental Methods in Engineering Mechanics

436. Computer Vision Techniques to Measure Displacements in Civil Infrastructure. G. R. Wieger and J. M. Caicedo
437. Monitoring of Interface Debonding and Slip Using OTDR Techniques S. C. S. Cai, S. Hou and J. Ou
438. Applications of FBG Sensors for Subsidence and Moisture Monitoring S. Hou, S. C. S. Cai and J. Ou
439. Progressive Bond Failure Investigation Using X-Ray Tomography J. Li and L. N. Lowes
440. Mitigation of Bridge Deck Vibrations and Visualization of Flow Patterns Using PIV W. Zhang, Y. Ge and S. C. Cai
441. Experimental Studies of Vortex Shedding Excitation and Mitigation of Large Span Bridges by Guide Vanes W. Zhang, Y. Ge and S. C. S. Cai

Saturday, Session SA8 (1:50-3:50) – Mechanics of Pavements and Paving Materials

608. Performance Monitoring of Pavement using Distributed Sensors W. Xue and L. Wang
607. Observing the Diffusion of Water into Asphalt Binder Using Magnetic Resonance Imaging A. Stanford
949. DEM Simulation of Erosion Mechanism for Semi-rigid base using PFC3D Y. Sheng, S. Chen, and L. Wang
950. Asphalt Mixture Fatigue Evaluation using X-Ray Tomography and Finite Element Simulation C. Wan, X. Zhang, and L. Wang
495. Effect of Sulfates and Acids on Concrete Containing Rubber A. F. Shaheen
496. Evaluating the Effects of Fine Rubber Aggregate on Concrete Performance A. F. Shaheen

Saturday, Session SA9 (1:50-3:50) – Vibratory Energy Harvesting Systems

842. On the Influence of a Nonlinear Restoring Force on Piezoelectric Cantilever Energy Harvesting S. C. Stanton and B. P. Mann
843. Analytical Analysis of Power Harvesting from Environments with Time-Varying Frequency T. Osorio and M. Daqaq
844. Energy Harvesting via Parametric Excitations M. Daqaq, C. Stabler, Y. Qaroush and T. Osorio
845. Feedback Optimization in Passive Energy Harvesting Networks J. T. Scruggs
846. Lift Force in a Reciprocating Small Scale Low-Head, Low-Flow Rate Hydropower Concept R. B. Malla, B. Shrestha, J. Drasdis and A. Bagtzoglou
847. Analytical Modeling and Experimental Verification of a Broadband Piezoelectric Energy Harvester A. Erturk, S. R. Anton, P. A. Tarazaga and D. J. Inman
361. External Force Configuration Effects on Sound Radiation of Thick Infinite Plate S.M. Hasheminejad and M. Mohammadali

Saturday, Session SA10 (1:50-3:50) – Advanced Materials

287. Retrofitting Reinforced Concrete Columns using Advanced Composite Materials to Resist Earthquakes M. O. Hassan
502. Development and Performance Evaluation of Design-Variable Hwangto Bricks S. Lim, H. Lee, H. Park and S.-S. Go
504. A Study on the Development and Performance Evaluation of Puzzled Hwangto Bricks J. H. Kim, G Lee, H K. Park and S.-S. Go
508. Test Study on Stabilization of Fine Sand with Silt G. Hua-Dong, Z. Ke and Q. Peng-Fei
510. A Study on the Development of Environment-Friendly Loessboard G.-J. Kim, H-C Lee, H-K. Park and S.-S. Go
277. Roller Compacted Concrete Properties using High Percentage Fly Ash and High Silica Fume
541. Exact Solution for Vibration of Functionally Graded SS-C-SS-C Rectangular Plates subjected to Linearly varying In-Plane Loads M. Banakar and A. Hosseinian

Saturday, Session SA11 (1:50-3:50) – Mechanics of Materials

576. Static Deformations of Functionally Graded Polar-Orthotropic Cylinders with Elliptical Inner and Circular Outer Surfaces G. Nie and R. C. Batra
589. Overall Properties of Binary Periodic Composites with Anisotropic Dielectric Components E. Lopez-Lopez and F. J. Sabina
563. An Extension of the Zaki-Moumni Model for Shape Memory Alloys Accounting for Plastic Deformation W. Zaki and Z. Moumni
559. Analysis of Smart Hybrid Composite Reinforced With Carbon Nanotubes-Coated Piezoelectric Fibers M. C. Ray
580. Elastic Behavior of Some Random Multi-Scale Highly-Contrasted Composites F. Willot and D. Jeulin