

Engineering Mechanics Institute Conference Minisymposia

Baltimore, MD; May 31 – June 3, 2022

100 HONORARY

MS 101: [The Next Frontiers in Natural Hazards Engineering: Advancing the Vision of Ahsan Kareem \(by invitation only\)](#)

Tracy Kijewski-Correa, Alexandros Taflanidis

200 SOLIDS

MS 201: [Multiscale Behavior of Damage and Failure Mechanics](#)

Leong Hien Poh, Lizhi Sun, Jiann-Wen Ju, George Z. Voyiadjis, Glauco Paulino

MS 202: [Cementitious Materials: Experiments and Modeling Across the Scales](#)

Bernhard Pichler, Franz-Josef Ulm, Günther Meschke, Christian Hellmich, Gilles Pijaudier-Cabot

MS 203: [Physics-Based Data-Driven Modeling and Uncertainty Quantification in Computational Materials Science and Engineering](#)

Johann Guilleminot, Michael Shields, Lori Graham-Brady, Kirubel Teferra

MS 204: [Architected Materials](#)

Stavros Gaitanaros, James Guest, Mazdak Tootkaboni, Evgueni Filipov, Alireza Asadpoure, Lorenzo Valdevit, Pablo Zavattieri

MS 205: [Integration of Multiscale Modeling and Data Analytics for Stone-Based Infrastructure Material Design](#)

Linbing Wang, Ya Wei

MS 206: [Waves in Elastic Metamaterials and Phononic Crystals](#)

Loukas Kallivokas, Bojan Guzina, Heedong Goh

MS 207: [Dispersive Waves and Shock in Solid Domains with Micro-Structure](#)

Reza Abedi, Alireza Amirkhizi, Thomas Plaisted

MS 208: [Mechanics and Physics of Granular Materials](#)

Anthony Rosato, Marcial Gonzalez, Matthew Kuhn, Ryan Hurley, Jidong Zhao, Anil Misra, Mahdia Hattab

MS 209: [Coupled Processes in Natural and Synthetic Porous Media: Experimental and Numerical Studies](#)

Pania Newell, Sara Abedi, Giuseppe Buscarnera, David N. Espinoza, Jean-Michel Pereira, Manolis Veveakis

MS 210: [Reduced-Order and Surrogate Models for Mechanics of Porous Media](#)

Dakshina Valiveti, Xiao-Hui Wu, Daniel Thomas Seidl

MS 211: [Challenges and Advances in Material Damage Modeling](#)

Mostafa Mobasher, Haim Waisman, Ravindra Duddu, Jia-Liang Le, Gilles Pijaudier-Cabot

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- MS 212: [The Link Between Composition, Structure, and Properties in Engineered and Natural Materials](#)
Mohammad Javad Abdolhosseini Qomi, Kemal Celik, Mathieu Bauchy, Enrico Masoero, Konrad Krakowiak
- MS 213: [Advances in Experimental, Theoretical, and Computational Fracture Mechanics](#)
Ange-therese Akono, Arghavan Louhghalam, Haim Waisman, Arturo Montoya
- MS 214: [Integrated Computational Materials Engineering \(ICME\) Mini-Symposium](#)
Mohammadreza Yaghoobi, George Voyiadjis
- MS 215: [Computational Methods and Applications for Solid and Structural Mechanics](#)
Xiang Zhang, Soheil Soghrati, Ravindra Duddu, Timothy Truster, Pinlei Chen
- MS 216: [Quasibrittle Fracture of Heterogeneous Composites: Modeling and Characterization](#)
Kedar Kirane, Marco Salviato, Jialiang Le
- MS 217: [Seventh Symposium on Molecular Scale Modeling and Experimentation](#)
Dinesh Katti, Nima Rahbar, Sinan Keten, Rouzbeh Shahsavari, Kalpana Katti, Steve Cranford, Wenjie Xia
- MS 218: [Advances and Applications of Elasticity Within Applied Mechanics](#)
Euclides Mesquita, Evgueni Filipov, Ney Dumont, John C. Brigham, Sonia Mogilevskaya, Anil C. Wijeyewickrema
- MS 219: [Mechanics of Wood and Wood Based Materials](#)
Markus Lukacevic, Sanjay Arwade, Josef Füssl
- MS 220: [Experimental Mechanics Using Optical Characterization](#)
Xiaomeng Ge, Zhengzheng Wang, Mingjie Zhang, Juan Murcia-Delso
- MS 221: [Mechanics of Soft and Active Interfaces: Theory, Simulations, and Experiments](#)
Berkin Dortdivanlioglu
- MS 222: [6th Mini-Symposium on 4M \(Modeling of Multiphysics-Multiscale-Multifunctional\) Engineering Materials and Structures](#)
Xiaoyu Song, Yong-Rak Kim, Chung Song, Huiming Yin, Qiming Wang
- MS 223: [Meshfree, Peridynamics, and Particle Methods: Contemporary Methods and Applications](#)
Mike Hillman, Sheng-Wei Chi, J.S. Chen, John Foster, Pablo Seleson
- MS 224: [Phase Transformation, Damage and Fracture in Discrete and Continuous Media](#)
Robert Lipton, Debdeep Bhattacharya, Patrick Diehl
- MS 225: [Integration of Physics-Based Models with Data for Identification, Monitoring, Estimation, and Uncertainty Quantification](#)
Hamed Ebrahimiyan, Hae Young Noh, Babak Moaveni, Yang Wang
- MS 226: [Mechanics of Self-Healing Structural Materials](#)

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Nima Rahbar

MS 227: [Mechanics of Growth and Evolution of Biological Solids](#)

Nima Rahbar, Tai Cohen

MS 228: [Mitigating Risks of Large-Scale Lithium-Ion Batteries as Energy Storage Systems or Electric Vehicles in Urban Environments](#)

Ali Ashrafi, Mahesh Bailakanavar

MS 229: [Recent Advances in Fabrication and Modeling of Additively Manufactured Refractory Materials](#)

Morgan Trexler, Gianna Valentino

300 STRUCTURES

MS 301: [Structural Identification and Damage Detection](#)

Eleni Chatzi, Babak Moaveni, Costas Papadimitriou

MS 302: [Structural Health Monitoring of Renewable Energy Solutions](#)

Vikram Pakrashi, Eleni Chatzi

MS 303: [Smart Sensor Networks for Civil Infrastructure Monitoring](#)

Jian Li, Simon Laflamme, Hongki Jo, Austin Downey

MS 304: [Contact and Remote Electromagnetic Sensing of Concrete Structures](#)

Tzuyang Yu

MS 305: [Advances in Vibration and Control of Structures](#)

Aly Mousaad Aly, Milad Rezaee

MS 306: [Practical Applications and Value of Advanced Computational and Probabilistic Modelling in the Life-Cycle of Structures](#)

Paolo Bocchini, Alfred Strauss, Helder Sousa

MS 307: [Advances in Computational Simulation Techniques for System Reliability Analysis](#)

Gaofeng Jia, Armin Tabandeh, Paolo Gardoni

MS 308: [Origami/Kirigami Inspired Structures and Metamaterials](#)

Evgueni Filipov, John Brigham, Phanisri Pradeep Pratapa, Mark Schenk, Martin Walker

MS 309: [Architected Metamaterials for Civil Structures](#)

Simos Gerasimidis, James Guest, Glauco Paulino

MS 310: [Computational Methods for Stochastic Engineering Dynamics](#)

Ioannis Kougioumtzoglou, Mircea Grigoriu, Antonina Pierrotta

MS 311: [Flexible Structures](#)

Vikram Pakrashi, Philip Cardiff

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- MS 312: [Structural Instabilities: From Failure to Function](#)
Stylianos Yiatros, M. Ahmer Wadee, Chee W. Lim, Rainer Groh
- MS 313: [Analysis of Heritage Structures: Tools and Methods for Assessing Unknowns in Historic Monuments and Structures](#)
Rebecca Napolitano, Linda Seymour, Branko Glisic, Admir Masic
- MS 314: [Advances in Mechanics of Additive Manufacturing of Metallic Structures](#)
Nima Rahbar
- MS 315: [Coupled Chemical, Physical and Mechanical Processes in Cementitious Materials for Regular and 3D Printed Constructions](#)
Mohammed Alnaggar, Roman Wan-Wendner, Giovanni Di Luzio, Liberato Ferrara
- MS 316: [Dimension and Model Reduction in Computational Mechanics and Engineering Systems](#)
Johann Guilleminot, Ruda Zhang, Roger Ghanem
- MS 317: [Structural Dynamic Analysis Based on Structural Health Monitoring or Rapid Field Testing](#)
Chunxu Qu, Ting-Hua Yi
- 400 DESIGN AND OPTIMIZATION**
- MS 401: [Topology Optimization: from Algorithmic Developments to Applications](#)
Mazdak Tootkaboni, James Guest, Alireza Asadpoure
- MS 402: [Geometries & Design: Opportunities for Sustainable Construction](#)
Jialong Zhang, Agathe Robisson, Ann Sychterz, Mija Hubler
- MS 403: [20th Symposium on Biological and Biologically Inspired Materials and Structures](#)
Dinesh Katti, Christian Hellmich
- MS 404: [Probabilistic Learning, Stochastic Optimization, and Digital Twins](#)
Amir H Gandomi, Roger Ghanem, Christian Soize
- MS 405: [Inverse Problems – Theory and Applications](#)
Loukas Kallivokas, Bojan Guzina, Ertugrul Taciroglu
- MS 406: [Probabilistic Assessment, Inference, and Optimization Under Uncertainty](#)
Kostas Papakonstantinou, Charalampos Andriotis, George Deodatis
- MS 407: [Advances in Computational Methods for Uncertainty Quantification and Robust/Performance-Based Design of Structures and Systems Exposed to Natural and Man-Made Hazards](#)
Seymour Spence, Alexandros Taflanidis, Michael Shields
- MS 408: [Additive Manufacturing of Programmable Matter](#)
Jochen Mueller

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500 FLUID AND ENVIRONMENTAL MECHANICS

MS 501: [Computational Fluid Dynamics \(CFD\) and Fluid-Structure Interaction \(FSI\): Method Development and Applications](#)

Jinhui Yan, Georgios Moutsanidis, Yuri Bazilevs

MS 502: [Advances of Fluid Dynamics in Modelling and Simulation](#)

Mritunjay Singh

MS 503: [Junction Flows, Local Scour Processes and Mitigation Strategies in Riverine and Coastal Environments](#)

Celso Castro Bolinaga, Aly Mousaad Aly, Panayiotis Diplas

600 HAZARDS

MS 601: [The Sixth Mini-Symposium on Advanced Analysis for Earthquake Engineering](#)

Ting Lin, Kevin Wong, Steven McCabe

MS 602: [Complex Dynamics and Vibration Control of Infrastructure Exposed to Single/Multiple Hazards](#)

Chao Sun, Mariantonieta Soto, Lin Chen

MS 603: [Innovations and Advances in Passive, Active, and Semi-Active Structural Control](#)

Nicholas Wierschem, P. Scott Harvey

MS 604: [Advances in Quantitative Resilience and Sustainability](#)

Arghavan Louhghalam, Mazdak Tootkaboni, Hadi Meidani, Franz-Josef Ulm, Roger Ghanem

MS 605: [Objective Resilience and Sustainability of Engineering Infrastructures: Eminent Domains and Interactions](#)

Fariborz Tehrani

MS 606: [Resilience of Coastal Structures, Systems, and Community Subjected to Hazards](#)

Wei Zhang, Jamie Padgett, Andre Barbosa

MS 607: [Developments in Performance-Based Structural Fire Engineering](#)

Thomas Gernay, Negar Elhami-khorasani

MS 608: [Civil Infrastructure in a Changing Climate: from Nonstationary Risk Assessment to Developing Adaptation Strategies](#)

Eun Jeong Cha, Abdollah Shafieezadeh

MS 609: [Analysis and Prediction of Wind Effects on the Built Environment](#)

Marco Giometto, Teng Wu, Catherine Gorle

MS 610: [Recent Advances in Computational Modeling on Tropical Cyclone Induced Multi-Hazards](#)

Chao Sun, Ning Zhang, Celalettin Ozdemir

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MS 611: [Recent Advances in Experimental and Computational Wind Engineering](#)
Aly Mousaad Aly, R. Panneer Selvam

MS 612: [Robustness of Infrastructures](#)
Simos Gerasimidis, George Deodatis

MS 613: [Recent Advances in Response Modification Devices and Strategies](#)
Nicos Makris, Konstantinos Kalfas

MS 614: [Modeling Deterioration of Structures and Infrastructure](#)
Gaofeng Jia, Paolo Gardoni, Alessandro Contento

700 AI, MACHINE LEARNING, DATA-DRIVEN METHODS AND EMERGING METHODS

MS 701: [Advances in Computer Vision, Deep Learning, and Artificial Intelligence for Structural Health Monitoring and Inspections](#)
Vedhus Hoskere, Jian Li, Mohammad Jahanshahi, Fernando Moreu, Wei Song, Sriram Narasimhan

MS 702: [Uncertainty Quantification-Aided Machine Learning in Engineering for Hazards](#)
Som Dhulipala, Michael Shields, Henry Burton

MS 703: [Civil Engineering and Artificial Intelligence: Where to go from here?](#)
Mz Naser, Thomas Gernay

MS 704: [Advances in Machine Learning and Surrogate Modeling for Probabilistic Analysis and Optimal Operation, Control, and Planning of Infrastructure Systems](#)
Negin Alemazkoor, Abdollah Shafieezadeh

MS 705: [Advances in Deep Learning-Based Infrastructure Assessment](#)
Zhilu Lai, Eleni Chatzi, Hae Young Noh, Satish Nagarajaiah

MS 706: [AI Applications for Wind Engineering](#)
Teng Wu, Yanlin Guo, Gang Hu, Xiaowei Deng

MS 707: [Machine Learning for Forward and Inverse Problems](#)
Chanseok Jeong

MS 708: [2nd Mini Symposium on Machine Learning-Based Computational Modeling for Civil Engineering Applications](#)
Alessandro Fascetti, Caglar Oskay, John Brigham

MS 709: [Surrogate Modeling for Uncertainty Quantification, Optimization, and Statistical Inference in Engineering Applications](#)
Gaofeng Jia, Abdollah Shafieezadeh

MS 710: [Innovative Experimental Analysis](#)
Mija Hubler, Bernhard Pichler, Ali Ghahremaninezhad

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MS 711: [Recent Advances in Real-Time Hybrid Simulation](#)

Wei Song, Richard Christenson

MS 712: [Data-Driven Approaches to Engineering Mechanics](#)

Fatemeh Pourahmadian, Jeong-hoon Song

MS 713: [Assessing Human-Infrastructure Interactions and their Performance](#)

Fernando Moreu, Haeyoung Noh, Ken Loh

MS:714 [Innovations in Teaching of Engineering Mechanics](#)

Vikram Pakrashi, Basuraj Bhowmik

800 GEOMECHANICS

MS 801: [Geomechanics of Geological Carbon Storage and Enhanced Hydrocarbon Recovery](#)

Amin Mehrabian, Yanhui Han, Shengli Chen

MS 802: [Computational Geomechanics 2022](#)

Xiaoyu Song, Ronaldo Borja, Richard Regueiro, Jose Andrade, Majid Manzari, Steve Sun, Qiushi Chen, Jinhyun Choo, Shabnam Semnani

MS 803: [Soil Dynamics and Wave Propagation in Geostructures](#)

Loukas Kallivokas, Ertugrul Taciroglu, Bojan Guzina

MS 804: [Chemo-Mechanics of Asphalt Materials: Experimental Characterization and Numerical Modeling](#)

Hao Wang, Ramez M. Hajj, Linbing Wang, Augusto Cannon Falchetto