

SMASIS Conference Synopsis

Adaptive Structures and Materials Systems by definition are intelligent systems that have sentience and responsiveness to changing environments. The field has rapidly matured due to interdisciplinary efforts across universities, government, and industry. To continue the high impact growth of this field, the purpose of this conference is to assemble world experts across engineering and scientific disciplines (mechanical, aerospace, electrical, materials, and civil engineering, biology, physics chemistry, etc.) to actively discuss the latest breakthroughs in smart materials, the cutting edge in adaptive structure applications and the recent advances in new device technologies and basic engineering research. The conference is divided into symposia ranging from basic research to applied technological design and development to industrial and governmental integrated system and application demonstrations.

Schedule

February 22, 2021: 400 word abstract due

March 1, 2021: Abstract acceptance notification

April 22, 2021: Full-length draft paper due

May 31, 2021: Paper acceptance notification

June 22, 2021: Copyright form due

June 30, 2021: Final revised paper due

Full papers will appear in an archival ASME Conference Proceedings. Selected papers will be published in archival Journals.

Authors please note: Only 2 presentations per author are allowed with one full registration.

Participation

Authors should submit a 400 word abstract to the conference web site <https://event.asme.org/smasis>
Questions can be directed to:

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Executive Committee

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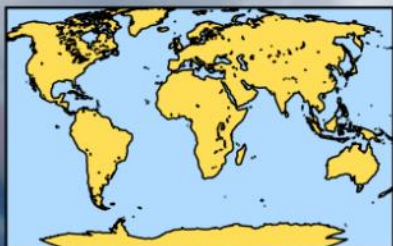


Image courtesy of Raitis Freimanis

Call for Abstracts

ASME Conference on SMART MATERIALS, ADAPTIVE STRUCTURES AND INTELLIGENT SYSTEMS

September 14 – 15, 2021

Virtual Event

Sponsored by the Adaptive Structures & Material Systems Branch, Aerospace Division

The conference is divided into symposia broadly ranging from basic research to applied technological design and development to industrial and governmental integrated system and application demonstrations. The symposia and their topical areas specifically are:

Development and Characterization of Multifunctional Materials

Chair: *Constantin Ciocanel, N. Arizona*

Co-Chairs: *Ji Su, NASA*

Bjoern Kiefer, TU Bergakademie Freiberg

Multifunctional material formulations, evaluation, synthesis, and processing; multifunctional composites and hybrid materials; bio-inspired and nano-composites; self-healing, shape memory, piezoelectric, electrostrictive and magnetostrictive materials; material property enhancement; interface and interaction science; data and AI/machine learning driven multifunctional materials discovery.

Bioinspired Smart Materials and Systems

Chair: *Joseph Calogero, Pratt & Whitney*

Co-Chairs: *Caterina Lamuta, Univ. of Iowa*

Joseph Najem, Penn State Univ.

Convergent topics in engineering and biology such as modeling and simulation of biological systems; biomechanics; biomimetic and bioinspired devices and materials; biomolecular assemblies, bioinspired or soft robotics; biohybrid or living machines; smart prosthetics and implants.

Modeling, Simulation and Control of Adaptive Systems

Chair: *James Gibert, Purdue University*

Co-Chair: *Rocco Vertechy, Univ. of Bologna*

Micro and macro level modeling; vibration and acoustic control; passive/semi-active/active damping and stiffness variation; actuation and motion control; intelligent and adaptive control; nonlinear control; hysteresis control; modeling simulation and control of micro/nano systems; nonlinear dynamics, and nonlinear vibration.

Energy Harvesting

Chair: *Sherry Towfighian, Binghamton Univ.*

Co-Chairs: *Soobum Lee, UMBC*

Christopher Cooley, Oakland Univ.

Modeling and experiments of energy harvesting transducers and applied systems using piezoelectric and magnetostrictive materials; electroactive polymers; inductive and capacitive devices; MEMS and NEMS configurations; novel circuits and storage devices; novel applications/analysis of traditional transduction (e.g. solar, thermoelectric); energy harvesting using metamaterials.

Structural Health Monitoring

Chair: *Benjamin Grisso, Navy*

Co-Chairs: *Daewon Kim, Embry Riddle*

Nathan Salowitz, UW Milwaukee

Structural asset and life cycle monitoring; condition-based and predictive maintenance; damage detection; digital twin; digital thread and authoritative source of truth; product lifecycle management; industrial IOT; AI and machine learning; physics-informed machine learning; data analytics, data science and big data; wireless and remote monitoring; edge computing; distributed sensing; human performance monitoring; HSI.

Integrated System Design and Implementation

Chair: *Andres Arrieta, Purdue*

Co-Chair: *Johannes Riemenschneider, DLR*

Adaptive/intelligent/integrated systems design; smart structures design processes and tools; smart devices and technologies; compliant mechanism design; Industrial and government smart products and system applications; sensors and actuators; power and control electronics; smart electronics and devices; MEMS.

Mechanics & Behavior of Active Materials

Chair: *Paris von Lockette, Penn State Univ.*

Co-Chairs: *Darren Hartl, Texas A&M*

John Gallagher, Merrimack College

Douglas Nicholson, Boeing

Advanced constitutive measurements; micro- and nano-mechanics of actuator & sensor materials; phase field modeling; multi-scale and multi-physics material models; finite element implementations; reliability issues: aging, fatigue, and fracture; materials for energy storage; multi-ferroic materials.

Emerging Technologies

Chair: *Julianna Abel, U. of Minnesota*

Co-Chair: *TBD*

Emerging research works that are aligned with the general theme of SMASIS but may not fit in the other symposia. E.g.: advanced and additive manufacturing; nano-manufacturing; topology optimization; soft robotics; human performance sensing and augmentation; wearable technologies, uncertainty analysis in materials and structures; among others.

ASME
SETTING THE STANDARD