SMASIS Conference Synopsis

Adaptive Structures and Materials Systems by definition are intelligent, flexible systems that have sentience and responsiveness to ever-changing environments. The field has rapidly matured due to synergistic interdisciplinary efforts across sectors of universities, government and industry. To continue the high impact growth of this field and lead it into the future, 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 both new device technologies and basic engineering research exploration. 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.

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Development and Characterization of Multifunctional Materials
Chair: Hani E. Naguib, Univ. of Toronto
Co-Chairs: Billy Oates, Florida State
Henry Sodano, Univ. of Florida
Topical areas: Material formulations, evaluation, synthesis, and processing; multifunctional composites and hybrid materials; bio-inspired and nano-composites; self-healing materials; novel triggering approaches, including optical, chemical, electrical, and mechanical; material property enhancement; interface and interaction science.

Mechanics & Behavior of Active Materials
Chair: Iain Anderson, Hysteresis, San Francisco
Co-Chair: Nazanin Bassiri-Gharb, Georgia Tech
Topical areas: 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.

Modeling, Simulation and Control of Adaptive Systems
Chair: Jeong-Hoi Koo, Miami Univ., Ohio
Co-Chairs: Bjorn Kiefer, TU Dortmund
Uwe Marschner, TU Dresden
Topical areas: 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.

Integrated System Design and Implementation
Chair: Eric Ruggiero, GE
Co-Chairs: Onur Bilgen, Old Dominion Univ.
Rich Beblo, Dayton Research Inst.
Topical areas: Sensors and actuators, power and control electronics, smart devices and technologies, compliant mechanism design, adaptive / intelligent / integrated systems design, smart structures design processes and tools, Industrial and Government smart products and system applications, smart electronics and devices, MEMS.

Structural Health Monitoring
Chair: Kenneth Loh, UC Davis
Co-Chairs: Andrew Swartz, Michigan Tech
Lingyu Yu, Univ. South Carolina
Topical areas: Damage identification & mitigation, sensor networks, data fusion, data mining and management, damage diagnostic and prognostic modeling software, system integration, and applications.

Bioinspired Smart Materials and Systems
Chair: Richard Trask, Univ. of Bristol
Co-Chairs: Andy Sarles, Univ. of Tennessee
Pablo Tarazaga, Virginia Tech
Topical areas: Modeling of biological systems, understanding physical phenomena in biological systems, biomimetic and bio-inspired devices, machines and robotics, utilizing biological systems, smart prosthetic systems and intelligent implant materials and structures.

Energy Harvesting
Chair: Adam Wickenheiser, George Washington Univ.
Co-Chairs: Kazuhiko Adachi, Kobe University
Michael Shafcr, Northern Arizona University
Topical areas: Modeling and experiments of energy harvesting using piezoelectric and magnetostrictive materials; dielectric, ferroelectric, and ionic electroactive polymers; inductive and capacitive devices; deterministic and stochastic excitations; broadband and nonlinear systems; aeroselastic, hydroelastic, and acoustic energy harvesting; MEMS and NEMS configurations; novel circuits and storage devices.