MECHANICS AND BEHAVIOR OF ACTIVE MATERIALS

SMASIS2012-7912
A Finite Element Study of Stable Crack-Growth in Superelastic Shape Memory Alloys
Antonino Parrinello, Theocharis Baxevanis, Dimitris Lagoudas, and Austin Cox

SMASIS2012-7913
Two-Phase Solid-Fluid Mathematical Model of Yield Stress Fluids
Ilya Peshkov, Miroslav Grmela, and Evgeniy Romenski

SMASIS2012-7919
Characterization of Work per Volume Density of VO₂-Based MEMS Actuators
Emmanuelle Merced, Jun Zhang, Xiaobo Tan, and Nelson Sepúlveda

SMASIS2012-7928
Technology Developments Towards a Practical SMA Aero Engine Application
John Webster

SMASIS2012-7934
Mode I Steady Crack-Growth in Superelastic Shape Memory Alloys
Theocharis Baxevanis, Dimitris Lagoudas, and Chad Landis

SMASIS2012-7937
Electromechanical Behavior of Conductive Polyaniline/Poly (Vinyl Alcohol) Blend Films
Under Uniaxial Loading
S. Akhilesan, Susy Varughese, and C. Lakshmana Rao

SMASIS2012-7949
Time Dependent Polarization and Strain Evolution Around a Circular Hole in Ferroelectrics
Q. D. Liu

SMASIS2012-7957
A Morphing Bi-Stable Composite Laminate Actuated by Electric Heating Method
Hao Li, Fuhong Dai, and Shanyi Du

SMASIS2012-7967
Combined Squeeze-Shear Properties of Magnetorheological Fluids: Effect of Pressure
Andrea Spaggiari and Eugenio Dragoni

SMASIS2012-7969
Modeling of Hybrid Shape Memory Alloy Composites Incorporating MAX Phase Ceramics
Brian T. Lester and Dimitris C. Lagoudas

SMASIS2012-7974
Modeling and Experimental Validation of Shape Memory Alloy Bending Actuators
Casey D. Haigh, John H. Crews, Shiquan Wang, and Gregory D. Buckner
Wireless Excitation and Electrical Impedance Matching of Piezoelectric Wafer Active Sensors  
*Rashed Hossain Bhuiyan, MD Mazharul Islam, and Haiying Huang*

Computational Design of a Reconfigurable Origami Space Structure Incorporating Shape Memory Alloy Thin Films  
*Darren Hartl, Richard Malak, and Kathryn Lane*

A Study of Actuation Fatigue of Shape Memory Alloy  
*Babatunde O. Agboola, Darren J. Hartl, and Dimitris C. Lagoudas*

Shape Memory Alloy Actuated Vertical Deploy Air Dam: Part 1 — Performance Requirements and Design  
*Alan L. Browne, Nancy L. Johnson, Hanif Muhammad, and Jeffrey Brown*

Development of a Lumped-Parameter Occupant Injury Assessment Model for Vehicular Blast Effects Simulation  
*JinHyeong Yoo, Muthuvel Murugan, and Dy Le*

A Design of an Active Tool Holding Device  
*Alexander L. Boldering and Annika Raatz*

Effect of Filler Materials on the Performance of Conformal Load-Bearing Spiral Antennas  
*Ali Daliri, Sabu John, Chun H. Wang, Amir Galehdar, Wayne S. T. Rowe, Kamran Ghorbani, and Paul J. Callus*

Cooling Strategies for a SMA Wire Actuator in a Feed Axis  
*Horst Meier, Jan Pollmann, and Alexander Czechowicz*

Active Twist Blades: Electromechanical Damping  
*Johannes Riemenschneider, Martin Schulz, and Martin Pohl*

On the Functional Characteristics of Adaptive Resetting of Shape Memory Actuators in the Field of Automotive Applications  
*Alexander Czechowicz and Sven Langbein*

Development of a Miniaturized Clamping Device Driven by Magnetic Shape Memory Alloys  
*Kathrin Schlüter, Philipp Blumenthal, and Annika Raatz*
Helicopter Rotor Blade Chord Extension Morphing Using a Centrifugally Actuated von-Mises Truss
Patrick Moser, Silvestro Barbarino, and Farhan Gandhi

Sensorless Control of SMA Using Seebeck Voltage
Sriram V. V. N. Malladi and Pablo A. Tarazaga

Application of SMA Actuators to Spacesuit Glove Mobility
Grant Atkinson, Kenton Kirkpatrick, Darren Hartl, and John Valasek

Cellular Honeycomb-Like Structures With Internal Inclusions in the Unit-Cell
Michael E. Pontecorvo, Silvestro Barbarino, and Farhan S. Gandhi

Cellular Honeycomb-Like Structures With Internal Buckling and Viscous Elements for Simultaneous Load-Bearing and Dissipative Capability
Silvestro Barbarino, Michael E. Pontecorvo, and Farhan S. Gandhi

Mechanism and Bias Considerations for Design of a Bi-Directional Artificial Muscle Actuator
Robert D. Vocke, III, Curt S. Kothera, and Norman M. Wereley

Fabrication of a Dielectric Electro Active Polymer Tube Actuator With Pre-Strain Mechanism
Oscar Alvarado and Alison Flatau

A Miniature MR Actuator With Impedance Sensing Mechanism for Haptic Applications
Tae-Heon Yang, Jeong-Hoi Koo, Sang-Youn Kim, and Dong-Soo Kwon

Application of Shape Memory Alloys in Locking Devices
Ralf Theiß, Daniel Lichte, and Kai-Dietrich Wolf

Problems and Solutions for Shape Memory Actuators in Automotive Applications
Sven Langbein and Alexander Czechowicz

Optimal Control of Gun Recoil Using Magnetorheological Dampers
Harinder J. Singh and Norman M. Wereley

High Speed Shape Memory Alloy Activation
Alexander Czechowicz, Jonas Böttcher, Sebastian Mojrzisch, and Sven Langbein
Novel Dielectric Stack Actuators for Dynamic Applications
Sven Herold, William Kaal, and Tobias Melz

Active Distributed Attachment Surfaces: Distributed Latching Technique and Demonstration
John A. Redmond, Isabel Czarnocki, Jonathan Luntz, Diann Brei, and Andrew Enke

Development of Multi-DOF Active Microvibration Emulator
Geeyong Park, Dae-Oen Lee, Jae-Hung Han, and Nam Seo Goo

A Bidirectional-Controllable Magnetorheological Energy Absorber for Shock and Vibration Isolation Systems
Xian-Xu Bai, Norman M. Wereley, Wei Hu, and Dai-Hua Wang

Performance Modeling of a Smart Material Hydraulic Actuator
John P. Larson and Marcelo J. Dapino

Thermomechanical Behavior of Low CTE Metal-Matrix Composites Fabricated Through Ultrasonic Additive Manufacturing
Ryan Hahnlen and Marcelo J. Dapino

The Effect of the Configuration of the Amplification Device on the Power Output of a Piezoelectric Strip
Jesse M. McCarthy, Arvind Deivasigamani, Sabu J. John, Simon Watkins, and Floreana Coman

Compliant Articulation Structure Using Superelastic NiTiNOL
Jiening Liu, Mary I. Frecker, Ben Hall, and Ted Reutzel

The Variations in Active Panel Location and Number for a Bioinspired Aircraft Gust Alleviation System
Christopher J. Blower and Adam M. Wickenheiser

Design of Bend-and-Sweep Compliant Mechanism for Passive Shape Change
Yashwanth Tummala, Mary Frecker, Aimy Wissa, and James E. Hubbard, Jr.

Preliminary Investigation of a Fishbone Active Camber Concept
Benjamin King Sutton Woods and Michael I. Friswell
Fabrication and Characterization of a Membrane Based Hair Cell Sensor That Features Soft Hydrogel Materials

Nima Tamaddoni and Andy Sarles

Characterization of Shape-Changing Panels With Embedded Rubber Muscle Actuators

Larry D. Peel, Enrique Molina, Jeff Baur, and Ryan Justice

SUEX Flapping Wing Mechanisms for Pico Air Vehicles

Kiron Mateti, Rory A. Byrne-Dugan, Srinivas A. Tadigadapa, and Christopher D. Rahn

Wing Rotation and Lift Modeling and Measurement in SUEX Flapping Wing Mechanisms

Kiron Mateti, Rory A. Byrne-Dugan, Srinivas A. Tadigadapa, and Christopher D. Rahn

A Biomimetic Jellyfish-Inspired Jet Propulsion System Using an Iris Mechanism

Kenneth Marut, Colin Stewart, Alex Villanueva, Dragan Avtrovik, and Shashank Priya

Detection of Botulinum Neurotoxin/A Insertion Using an Encapsulated Interface Bilayer

Graham Taylor, Donald Leo, and Andy Sarles

Development of Localized, Light-Weight Pressurization Mechanisms: Approach, Feasibility, and Impact

Thomas M. Sutter, Matthew B. Dickerson, Terry S. Creasy, Jeffery W. Baur, and Ryan S. Justice

Combined Modeling of Bilayer Networks for Sensing Applications

Eric C. Freeman, Michael K. Philen, and Donald J. Leo

The Role of Compliant Joint and Flexibility on the Propulsive Performance of a Self-Propelled Caudal Fin

Ashok K. Kancharala, Michael K. Philen, and Mayuresh J. Patil

Designing Active Surface Structures to Regulate Heat Transport in Microchannels

Zachary Grant Mills, Basat Aziz, and Alexander Alexeev

Underwater Tracking and Size-Estimation of a Moving Object Using an IPMC Artificial Lateral Line

Ahmad T. Abdulsadda and Xiaobo Tan
Investigation of Host Structure Compliance in Aeroelastic Energy Harvesting
Matthew Bryant, Ricky Tse, and Ephrahim Garcia

Model Reduction of Piezoelectric Energy Harvesters Subject to Band-Limited, Stochastic
Base Excitation
Adam M. Wickenheiser

Piezoelectric Energy Harvesting Through Fluid Excitation
Andrew Truitt and S. Nima Mahmoodi

Modeling, Analysis and Experimental Validation of an Electromagnetic Energy
Harvesting Unit
Yan Chen and Armaghan Salehian

Modeling of a Vibration-Based Piezomagnetoelastic Energy Harvesting System by
Using the Duffing Equation
Henrik Westermann, Marcus Neubauer, and Jörg Wallaschek

Magnetic Coupled Cantilever Piezoelectric Energy Harvester
Lihua Tang, Yaowen Yang, and Liya Zhao

A Practical Power Maximization Design Guide for Piezoelectric Energy Harvesters Inspired
by Avian Bio-Loggers
Michael W. Shafer, Matthew Bryant, and Ephrahim Garcia

New Insights Into Piezoelectric Energy Harvesting Using a Dynamic Magnifier
James M. Gibert, Saad Alzemi, Frederick E. Paige, and Mohammed F. Daqaq

Non-Linear Modeling and Analysis of Composite Helicopter Blade for Piezoelectric
Energy Harvesting
Wander G. R. Vieira, Fred Nitzsche, and Carlos De Marqui, Jr.

A Micro Kinetic Energy Harvester Demonstrating Energy Harvesting From 3-D Mechanical
Motion and Power Increasing Through Magnetic-Based Frequency Rectification
Tien-Kan Chung, Chieh-Min Wang, Chia-Yuan Tseng, Tzu-Wei Liu, and Po-Chen Yeh

Multi-Source Energy Harvesting Schemes With Piezoelectrics and Photovoltaics on an
Avian Bio-Logger Draft
Alexander Schlichting, Michael Shafer, and Ephrahim Garcia
<table>
<thead>
<tr>
<th>Paper ID</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMASIS2012-8147</td>
<td>Electroelastic Modeling and Experimental Validation of Piezoelectric Energy Harvesting From Broadband Random Vibrations</td>
<td>Sihong Zhao and Alper Erturk</td>
</tr>
<tr>
<td>SMASIS2012-8157</td>
<td>Theoretical and Experimental Evaluation of System Energy Balance and Power Generation Efficiency for Piezocomposite Vibration Energy Harvester Under Low Intensity Excitation Condition</td>
<td>Kazuhiko Adachi and Tatsuya Sakamoto</td>
</tr>
<tr>
<td>SMASIS2012-8171</td>
<td>Characterization of Mechanically-Equivalent Amplifiers and Frequency Modulating Concepts for Energy Harvesting Devices</td>
<td>Nizar Lajnef, Rigoberto Burgueño, Wassim Borchani, Yi Sun, and Annelise Heeringa</td>
</tr>
<tr>
<td>SMASIS2012-8174</td>
<td>Modeling of a Composite Piezoelectric/Shape Memory Alloy Cantilevered Beam for Vibration Energy Harvesting</td>
<td>Mohamed Rhimi and Nizar Lajnef</td>
</tr>
<tr>
<td>SMASIS2012-8179</td>
<td>Optimization of the Charging Process for Dielectric Elastomer Generators</td>
<td>Christian Graf, Thorben Hoffstadt, and Jürgen Maas</td>
</tr>
<tr>
<td>SMASIS2012-8212</td>
<td>Small Wind Energy Harvesting From Galloping Using Piezoelectric Materials</td>
<td>Liya Zhao, Lihua Tang, and Yaowen Yang</td>
</tr>
<tr>
<td>SMASIS2012-8224</td>
<td>Piezoelectret Foam-Based Vibration Energy Harvester for Low-Power Energy Generation</td>
<td>Steven R. Anton and Kevin M. Farinholt</td>
</tr>
<tr>
<td>SMASIS2012-8247</td>
<td>A Feasibility Investigation on Improving Structural Integrity of Thermoelectric Modules With Varying Geometry</td>
<td>Ugur Erturun and Karla Mossi</td>
</tr>
<tr>
<td>Author Index</td>
<td></td>
<td>xiv</td>
</tr>
</tbody>
</table>