PROCEEDINGS OF SPIE

Active and Passive Smart Structures and Integrated Systems XII

Alper Erturk
Jae-Hung Han
Editors

5–8 March 2018 Denver, Colorado, United States

Sponsored by SPIE

Cosponsored by OZ Optics, Ltd. (United States) Polytec, Inc. (United States)

Cooperating Organizations

Jet Propulsion Laboratory (United States)

Colorado Photonics Industry Association (United States)

Published by SPIE

Volume 10595

Part One of Two Parts

Proceedings of SPIE 0277-786X, V. 10595

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

Active and Passive Smart Structures and Integrated Systems XII, edited by Alper Erturk, Jae-Hung Han, Proc. of SPIE Vol. 10595, 1059501 \cdot © 2018 SPIE \cdot CCC code: 0277-786X/18/\$18 \cdot doi: 10.1117/12.2317751

The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIEDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings:

Author(s), "Title of Paper," in Active and Passive Smart Structures and Integrated Systems XII, edited by Alper Erturk, Jae-Hung Han, Proceedings of SPIE Vol. 10595 (SPIE, Bellingham, WA, 2018) Seven-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510616868

ISBN: 9781510616875 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445

3515.019

Copyright © 2018, Society of Photo-Optical Instrumentation Engineers.

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is \$18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/18/\$18.00.

Printed in the United States of America.

Publication of record for individual papers is online in the SPIE Digital Library.



Paper Numbering: Proceedings of SPIE follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The first five digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.

Contents

xi Authors

xv Conference Committee

Part One

SESSION 1	ENERGY HARVESTING I: NONLINEAR
10595 03	Efficiency and effectiveness of stabilization control of high-energy orbit for wideband piezoelectric vibration energy harvesting [10595-1]
10595 05	Investigating a magnetically coupled vibration energy harvesting system under impulsive excitations $[10595\text{-}3]$
SESSION 2	PASSIVE AND ACTIVE VIBRATION ISOLATION/ATTENUATION I
10595 07	Mechanical responses of a magnetorheological damper [10595-119]
10595 08	A modified Shunted Switch Architecture (SSSA) for active vibration control [10595-6]
10595 09	Effects of a piezoelectric based nonlinear energy sink on the behavior of an electromechanically coupled beam [10595-7]
10595 0A	A synthetic shunt for piezoelectric-based state switching [10595-8]
10595 OB	Performance evaluation of a semi-active cladding connection for multi-hazard mitigation [10595-9]
SESSION 3	ENERGY HARVESTING II: PIEZOELECTRIC
10595 0D	Electrically rectified piezoelectric energy harvester excited by rotary magnetic plucking [10595-11]
10595 OE	On the circuit solutions towards broadband and high-capability piezoelectric energy harvesting systems [10595-13]
10595 OF	Energy harvesting from torsions of patterned piezoelectrics [10595-14]
10559 01	Exploiting dynamic interaction of magnets to enhance off-resonance energy harvesting performance [10595-17]

SESSION 4	MORPHING AND DEPLOYABLE STRUCTURES
10595 OJ	Conceptual design and dynamic analysis of bistable deployable structure [10595-18]
10595 OK	Control strategy of an electrically actuated morphing flap for the next generation green regional aircraft [10595-19]
10595 OL	Aeroelastic stability analysis of a large civil aircraft equipped with morphing winglets and adaptive flap tabs [10595-20]
10595 OM	Feasibility studies for the installation of Plasma Synthetic Jet Actuators on the skin of a morphing wing flap [10595-21]
SESSION 5	FLUID-STRUCTURE INTERACTION
10595 00	Fluidic harvester under Train of Frozen Boxcars (TFB) loading: a parametric study [10595-23]
103/3 00	Tibidic naivesier under fram of frozen boxcars (115) loading, a parametric study [10073-20]
10595 OP	Piezoelectric flow harvesting for in-pipe metering systems [10595-24]
10595 0Q	Feasibility study of interacting side-by-side piezoelectric harvesters in low-intensity grid- generated turbulence [10595-25]
10595 OR	On the coupling of nonlinear macro-fiber composite piezoelectric cantilever dynamics with hydrodynamic loads [10595-26]
SESSION 6	BISTABLE STRUCTURES AND ENERGY HARVESTERS
10595 OS	Triggering the high-energy orbit oscillation of bistable energy harvesters using electrical coupling [10595-27]
10595 OT	Synchronized switch technique based on dynamical state of bi-stable energy harvesters [10595-28]
10595 OU	Self-tuning stochastic resonance energy harvester for smart tires [10595-29]
10595 OV	Buckled bistable beam actuation with twisted strings [10595-30]
10595 OW	Dynamics of a bistable coupled dual-beam energy harvester and its experimental validation [10595-31]
10595 OX	Response invariance in a lattice of bistable elements with elastic interactions [10595-32]
10595 OY	A tunable nonlinear vibration energy harvester based on a magnetically-sprung resonator using ring magnets [10595-33]

SESSION 7A	BIO-INSPIRED STRUCTURES AND SYSTEMS
10595 10	Energy release for the actuation and deployment of muscle-inspired asymmetrically multistable chains [10595-35]
10595 11	Bio-inspired hybrid vibration control methodology for intelligent isolated bridge structures [10595-36]
10595 12	Energy transfer between multiple vibrating bimorphs through flow interactions in an otherwise quiescent fluid domain [10595-37]
SESSION 7B	METAMATERIALS AND METASTRUCTURES I
10595 14	Supratransmission in a metastable modular metastructure for tunable non-reciprocal wave transmission [10595-39]
10595 15	Dispersion tailoring in varying-inductance piezoelectric metamaterials [10595-136]
10595 16	Internally coupled piezoelectric metamaterial beam with multi-functionalities [10595-41]
10595 17	Locally resonant metamaterials with shape-memory alloy springs [10595-42]
10595 18	Passive metamaterial-based acoustic holograms in ultrasound energy transfer systems [10595-43]
SESSION 8A	ENERGY HARVESTING III: PIEZOELECTRIC
10595 1A	Nonlinear thermally buckled piezoelectric energy harvester [10595-45]
10595 1B	Multiple piezo-patch energy harvesters on a thin plate with respective AC-DC conversion [10595-46]
10595 1C	Varying cross-section and axial strain-gradient effects in flexoelectric cantilevers at submicron thickness levels [10595-47]
SESSION 8B	ACOUSTIC/FLUID-STRUCTURE INTERACTION
10595 1D	Investigation of bubble dynamics in nonlinear acoustic field [10595-48]
10595 1E	Interaction of side-by-side fluidic harvesters in fractal grid-generated turbulence [10595-49]
10595 1F	Piezoelectric gas flow controller based on dual-bimorph actuators [10595-50]
10595 1G	Modeling electroelastic nonlinearities in ultrasound acoustic energy transfer systems [10595-51]

SESSION 9A	MAGNETIC AND MAGNETO/ELECTRORHEOLOGICAL SYSTEMS
10595 1H	Semi-active inerters using magnetorheological fluid: a feasibility study [10595-52]
10595 1J	The effect of magnetic field on surface roughness of magnetorheological elastomers: a theoretical simulation [10595-54]
10595 1K	Design and analysis of a magnetorheological damper for airplane landing gear [10595-55]
10595 1M	Experimental evaluation of a miniature haptic actuator based on electrorheological fluids [10595-57]
SESSION 9B	PIEZOELECTRIC MATERIALS AND SYSTEMS I
10595 1P	On the consideration of operational deformation shapes in bi-stable energy harvesters [10595-60]
10595 1Q	Detection of compartmental forces and location of contact areas with piezoelectric transducers in total knee arthroplasty [10595-61]
Part Two	
10595 1R	Multiphysics modeling of mesh piezoelectric atomizers [10595-62]
10595 1\$	Experimental study of an adaptive CFRC reflector for high order wave-front error correction [10595-63]
10595 1T	Flywheel piezoelectric actuator for active vibration control applications [10595-64]
SESSION 10A	ENERGY HARVESTING IV: DESIGN AND OPTIMIZATION
10595 1V	Experimental verification of tire energy harvester designed via reliability based design optimization method [10595-66]
10595 1W	Modeling and design of electromagnetic and piezoelectric chest strain energy harvesters including soft tissue effects [10595-67]
10595 1Z	Design and characterization of an ocean wave powered lifejacket using 2DOF floating boards [10595-70]
	boards [10070 70]

SESSION 10B	PASSIVE AND ACTIVE VIBRATION ISOLATION ATTENUATION II
10595 21	Experimental study on electromagnetic damper with cable vibration control and energy harvesting function [10595-72]
10595 22	Active mass damper system for high-rise buildings using neural oscillator and position controller: generation method for desired stroke of auxiliary mass using synchronous detection [10595-73]
10595 25	Research on seismic performance of a new type energy dissipating coupling beam damper $\left[10595\text{-}76\right]$
SESSION 11A	SMART SENSING AND SIGNAL PROCESSING FOR DIAGNOSTICS
10595 27	New control strategies with inertial monolithic sensors: advantages and limitations in the control of benches and platforms for seismic isolation [10595-79]
10595 29	A rotational energy harvester for wireless health condition monitoring by utilizing intrinsic structure of bearing [10595-81]
10595 2A	Exploiting self-sensing features of carbon nanotubes composite structures for active vibration control [10595-115]
SESSION 11B	PIEZOELECTRIC MATERIALS AND SYSTEMS II
SESSION 11B 10595 2B	PIEZOELECTRIC MATERIALS AND SYSTEMS II Modeling of a multi-electrodes traveling-wave piezoelectric transformer [10595-82]
10595 2B	Modeling of a multi-electrodes traveling-wave piezoelectric transformer [10595-82] Nonlinear modeling and preliminary stabilization results for a class of piezoelectric smart
10595 2B 10595 2C	Modeling of a multi-electrodes traveling-wave piezoelectric transformer [10595-82] Nonlinear modeling and preliminary stabilization results for a class of piezoelectric smart composite beams [10595-83]
10595 2B 10595 2C 10595 2D	Modeling of a multi-electrodes traveling-wave piezoelectric transformer [10595-82] Nonlinear modeling and preliminary stabilization results for a class of piezoelectric smart composite beams [10595-83] Optimization of a two-frequency-two-mode piezoelectric linear motor [10595-84] Internal resonance of T-shaped structure for energy harvesting with magnetic nonlinearity
10595 2B 10595 2C 10595 2D 10595 2E	Modeling of a multi-electrodes traveling-wave piezoelectric transformer [10595-82] Nonlinear modeling and preliminary stabilization results for a class of piezoelectric smart composite beams [10595-83] Optimization of a two-frequency-two-mode piezoelectric linear motor [10595-84] Internal resonance of T-shaped structure for energy harvesting with magnetic nonlinearity [10595-85]
10595 2B 10595 2C 10595 2D 10595 2E SESSION 12A	Modeling of a multi-electrodes traveling-wave piezoelectric transformer [10595-82] Nonlinear modeling and preliminary stabilization results for a class of piezoelectric smart composite beams [10595-83] Optimization of a two-frequency-two-mode piezoelectric linear motor [10595-84] Internal resonance of T-shaped structure for energy harvesting with magnetic nonlinearity [10595-85] SHAPE MEMORY MATERIALS AND SYSTEMS Constitutive response of precipitation hardened Ni-Ti-Hf shape memory alloys through
10595 2B 10595 2C 10595 2D 10595 2E SESSION 12A	Modeling of a multi-electrodes traveling-wave piezoelectric transformer [10595-82] Nonlinear modeling and preliminary stabilization results for a class of piezoelectric smart composite beams [10595-83] Optimization of a two-frequency-two-mode piezoelectric linear motor [10595-84] Internal resonance of T-shaped structure for energy harvesting with magnetic nonlinearity [10595-85] SHAPE MEMORY MATERIALS AND SYSTEMS Constitutive response of precipitation hardened Ni-Ti-Hf shape memory alloys through micromechanical modeling [10595-88]

SESSION 12B	METAMATERIALS AND METASTRUCTURES II
10595 2K	Adaptive elastic metasurfaces for wave front manipulation [10595-91]
10595 2L	Tailoring vibration mode of a uniform beam by acoustic metamaterial synthesis [10595-92]
10595 2N	Observations on the behavior of discretely modulated spatiotemporal periodic structures [10595-94]
10595 20	Tunable bandgaps in a deployable metamaterial [10595-95]
SESSION 13A	ENERGY HARVESTING V: GENERAL
10595 2Q	Simultaneous vibration control and energy harvesting using actor-critic based reinforcement learning [10595-96]
10595 2R	Exact dynamics of an angle-shaped resonator for energy scavenging applications [10595-97]
10595 2\$	Active tuned mass damper to generate power from the propagating ocean waves [10595-98]
10595 2T	Systematic study of dual resonant rectilinear-to-rotary motion converter for low frequency vibrational energy harvesting [10595-100]
10595 2U	Modeling of a 3D acoustoelastic metamaterial energy harvester [10595-101]
10595 2V	Parametric resonance of a magnetically coupled harvester [10595-102]
10595 2W	Parametric studies of the passive hydroelastic responses and stability boundaries of flexible hydrodynamic lifting bodies [10595-131]
SESSION 13B	MAGNETORHEOLOGICAL SYSTEMS
10595 2Z	Design of new prosthetic leg damper for above knee amputees using a magnetorheological damper activated permanent magnet only [10595-107]
10595 31	Torque enhancement possibilities for energy-efficient MRF-based coupling elements [10595-109]
10595 32	Design of MR cabin mount for heavy duty vehicles subjected to severe vibrations [10595-110]
-	POSTER SESSION
10595 33	A parameter tuning method of negative capacitor circuit for piezoelectric shunt damping [10595-5]

10595 34	Structural vibration-based damage classification of delaminated smart composite laminates [10595-78]
10595 37	Control of a 1/4 MR semi-active suspension system using a RC hysteresis model for MR damper [10595-103]
10595 38	Impact analysis of fiber-reinforced composites by means of carbon nanotubes [10595-111]
10595 39	Numerical study of the of ultrasonic vibration in deep drawing process of circular sections with rubber die $[10595-112]$
10595 3A	Decentralized control of vibration with active smart dampers [10595-113]
10595 3B	Preliminary studies on SMA embedded wind turbine blades for passive control of vibration [10595-114]
10595 3C	Design and testing of a novel audio transducer to train string musical instruments [10595-116]
10595 3D	Towards the development of a triple SMA actuated vertical tube [10595-117]
10595 3E	Design and development of active bimorph structure for deployable space application [10595-118]
10595 3G	Theoretical modeling of a 2D nano-energy harvester [10595-121]
10595 31	Phosphor-free III-nitride nanowire white-light-emitting diodes for visible light communication [10595-123]
10595 3L	Experimental verification of a tuned inertial mass electromagnetic transducer [10595-127]
10595 3Q	A modified control plan to improve performance of tuned vibration absorber [10595-135]
10595 3R	Design analysis of a magnetorheological elastomer based bush mechanism [10595-137]

Authors

Numbers in the index correspond to the last two digits of the seven-digit citation identifier (CID) article numbering system used in Proceedings of SPIE. The first five digits reflect the volume number. Base 36 numbering is employed for the last two digits and indicates the order of articles within the volume. Numbers start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B...0Z, followed by 10-1Z, 20-2Z, etc.

A., Arockiarajan, 3G Acernese, F., 27 Addo-Akoto, Reynolds, 0V Aghakhani, Amirreza, 1B Alari, L., 0T

Amoroso, Francesco, OK, OL, OM Andreopoulos, Yiannis, OO

Ansari, Mh, 1A
Anton, Steven R., 1Q
Arena, Maurizio, 08, 0K, 0M
Arrieta, Andres F., 0T, 0X, 1P

Asai, Takehiko, 3L Aw, Kean, 16 Bai, Xian-Xu, 07, 37

Bakhtiari-Nejad, Marjan, 18, 1D

Banerjee, Sourav, 2U
Barone, F., 27
Basdogan, Ipek, 1B
Baxevanis, Theocharis, 2G
Bhargava, Aarushi, 2H
Bhattacharya, Bishakh, 3E
Bhuyian, Md Nasiruddin, 3I
Bradley, Andrew, 0Q
Braghin, Francesco, 0T, 2N
Bui, Thang Ha Quoc, 3I
Cai, Fei-Long, 07, 37

Callejas, Miguel A., 2J Candido de Sousa, Vagner, 17

Cao, Junyi, 29 Cao, Liang, 0B

Cazzulani, Gabriele, 2A, 2N

Cha, Ae-Ri, 2Z, 3R Cha, Youngsu, 0F Chae, Eun Jung, 2W Chang, C. C., 2Q Chang, Y. P., 0D Chen, Jingfan, 2T Chen, Peng, 37 Chen, Shiwei, 1J Chiappazzi, Nick, 1E Chiatto, Matteo, 0M

Choi, Seung-Bok, 1K, 2Z, 32, 3R

Chong, Jorge B., 21 Chu, Tsung-Yu, 2D Ciminello, Monica, 08

Cinquemani, Simone, 2A, 38, 39, 3A, 3B, 3C

Clementino, Marcel A., 09

Concilio, A., OL Costa, François, 2B D., Somayajulu, 3G Dai, Quanqi, 05

Danesh-Yazdi, Amir H., 0O, 0Q, 1E

Danzi, Francesco, 2R Das, Raj, 16 de Luca, Luigi, 0M De Marqui, Carlos, 09, 17 Deastra, Predaricka, 1H Deng, Xue-Cai, 07 Dimino, I., 0L

Dimitrakopoulos, Elias G., 2Q Djavid, Mehrdad, 3l Duan, Chengdong, 3Q

Dupuis, Eric, 1R Elahinia, Hedyeh, 2J Elahinia, Mohammad, 2J Elnahhas, Ahmed, 18

Elvin, Niell, 00

Erturk, Alper, 09, 0R, 15, 17, 1C

Fang, Houfei, 1S Ferko, Kevin, 0Q, 1E Gao, Qiang, 3Q Gardonio, Paolo, 1T Gibert, James M., 2R Giberti, Hermes, 3C Giordano, G., 27 Gong, Yongqiang, 0B Goushcha, Oleg, 0O Grisso, Benjamin L., 2T

Gutierrez Soto, Mariantonieta, 11

Haghdoust, P., 3B Hait, Arup Kumar, 3E Hajj, Muhammad R., 18, 1G Han, Chulhee, 1K Han, Jae-Hung, 0J, 0V Han, Jong-Seob, 0V Han, Ning, 3Q Harne, Ryan L., 05, 10 Hartl, Darren J., 2l Hegger, Christian, 31 Honda, Takuya, 33 Hongu, J., 22

Hsu, Yu-Hsiang, 1F, 2D Hu, Chao, 1V Hu, Guobiao, 0W, 16 Huang, Cheng-Yin, 1F Hwang, Myungwon, 0X

lba, D., 22

Ibrahim, Alwathiqbellah, 2E

Jeong, Suk-Yong, OJ Momen, Ayyoub M., 1R Jiang, Shuidong, 1S Moura, Adriane G., 1C Jikuva, Ichiro, 33 Nagahata, Yuichi, 0Y Joy, Jobin K., 2G Nanda, Aditya, 20 Jung, Ho-Yeon, 21 Nematollahi, Mohammadreza, 2J Jung, Hyung-Jo, 21 Nguyen, Hieu Pham Trung, 31 Kang, Byung-Hyuk, 1K Nishimura, Isao, 2S Karami, M. Amin, 1A, 2O Noviello, Maria Chiara, OK, OL Karimi, Saeed, 3D Oh, Sang-Heun, 32 Kato, Shingo, OY Ounaies, Zoubeida, 1W Kauffman, Jeffrey L., 0A Özer, Ahmet Özkan, 2C Kazem Sadoughi, Mohammad, 1V Park, Inhyuk, 05 Keddis, Sherif, OP Park, Yu-Jin, 3R Khan, Asif, 34 Patel, Viral K., 1R Kidambi, Narayanan, 10 Pecora, Rosario, OK, OL, OM Kim, Bo-Gyu, 1K Peng, Kaiyuan, 2H Kim, Gi-Woo, 3R Pillonnet, Gaël, 2B Kim, Heung Soo, 34 Ponder, Robert I., 1Q Kim, Hongjip, 0U Qian, Feng, 01 Kim, Seong-Hwan, 32, 3R Qian, Li-Jun, 37 Kim, Young-Cheol, 1V Qin, Weiyang, 0W Kitamura, N., 03 Quiel, Spencer, OB Konh, Bardia, 3D Rahn, Christopher D., 1W Koo, Jeong-Hoi, 1M Rajan Philip, Moab, 31 Kras, Aleksander, 1T Rea, Francesco, OK Kye, Seung-Kyung, 21 Resta, F., 3A Lachendro, David, 0Q, 1E Ricles, James, OB Laflamme, Simon, OB Riva, Emanuele, 2N Lagoudas, Dimitris C., 2G Romano, R., 27 Lan, Chunbo, 0W Ruzzene, Massimo, 15 Lan, Lan, 1S S. F., Ali, 3G Lee, Chih-Kung, 1F, 2D Saadatzi, Mohammad Nasser, 2U Lee, Jong-Wan, 0V Saadatzi, Mohammadsadegh, 2U Lee, Soobum, 1V Sadeghi, O., 12 Lee, Tae-Hoon, 2Z, 3R Safaei, Mohsen, 1Q Li, Rui, 1J Safwat, Tahzib, 1W Li, Shilong, 2K, 2L Sbaruffatti, Claudio, 2A, 38 Li, Xi, 1J Scaccabarozzi, Diego, 2A, 38 Liang, Junrui, 0E Schwesinger, Norbert, OP Liao, Wei-Hsin, OS Seidi, Ebrahim, 3D Lin, Jing, 29 Seo, Jong-Ho, 1V Shahab, Shima, 12, 18, 1D, 1G, 1R, 2H Liu, M., 25 Liu, Mingyi, 20 Sharma, Arun Kumar, 3E Lo Conte, A., 3B Shen, Sheng, 07 Sheykholeslami, M., 39 Loong, Cheng Ning, 2Q Lopp, Garrett K., 0A Shu, Y. C., 0D Maas, Jürgen, 31 Silva, Tarcisio M. P., 09 Marconi, Jacopo, 2N Simón, Pedro, 2A, 38 Martinez, Thomas, 2B Sims, Neil, 1H Masuda, Arata, 03, 0Y Sohn, Jung Woo, 34 Mazdak, S., 39 Solomou, Alexandros, 2G Mazursky, Alex J., 1M Srivastava, Rupal, 3E Meesala, Vamsi C., 1G Stremler, M., 12 Mehrabi, Reza, 2J Sugino, Christopher, 15, 17 Mi, Jia, 1Z, 20 Sugiura, Keita, 3L Micheli, Laura, OB Suh, Jong-Eun, OJ, OV Mir, Fariha, 2U Tai, Wei Che, 0U Mirzaeifar, Reza, 2H Takagi, Kentaro, 33 Mitry, Rafik, OP Tan, D., OR

χij

Miyata, Yusuke, OY

Tang, Jiong, 2K, 2L

Tang, Lihua, 0W, 16 Tavaf, Vahid, 2U Tipuric, Matthew, 1H Toghi Eshghi, Amin, 1V Towfighian, Shahrzad, 2E, 2V Udani, Janav P., OT, 1P Ushiki, Sou, OY Vasic, Dejan, 2B Viscardi, Massimo, 08 Vu, Phuoc, 31 Wagg, David, 1H Walgren, Patrick, 21 Wang, Jiahua, 0S Wang, K. W., 10, 14 Wang, L. Q., 25 Wang, W. C., 0D Wang, Xiaojie, 1J Wang, Ya, 2T Watanabe, Yuta, 3L Wu, Ke, 1S Wu, Zhen, 14 Xu, Jiawen, 2K, 2L Xu, Lin, 1Z, 20 Xu, Shi-Xu, 07 Yang, Tae-Heon, 1M Yang, Wei, 2E, 2V Yang, Yaling, 1Z Yoon, Dal-Seong, 32 Yoon, Ji-Young, 2Z You, Hangil, OF Young, Yin Lu, 2W Zhang, Ying, 29 Zhao, Bao, OE Zheng, L. F., 25 Zheng, Yisheng, 10 Zhou, Shengxi, Ol Zhou, Yang, 1S Zhu, Zhen-Ning, 37

Zhu, Ziheng, 20 Zuo, Lei, 0I, 0U, 1Z, 20

Conference Committee

Symposium Chairs

Tribikram Kundu, The University of Arizona (United States) **Gregory W. Reich**, Air Force Research Laboratory (United States)

Symposium Co-Chairs

Zoubeida Ounaies, The Pennsylvania State University (United States) **Hoon Sohn**, KAIST (Korea, Republic of)

Conference Chair

Alper Erturk, Georgia Institute of Technology (United States)

Conference Co-chair

Jae-Hung Han, KAIST (Korea, Republic of)

Conference Program Committee

Mehdi Ahmadian, Virginia Polytechnic Institute and State University (United States)

Steven R. Anton, Tennessee Technological University (United States)

Hiroshi Asanuma, Chiba University (Japan)

Diann E. Brei, University of Michigan (United States)

Matthew Bryant, North Carolina State University (United States)

Gregory P. Carman, University of California, Los Angeles (United States)

Seung-Bok Choi, Inha University (Korea, Republic of)

Alison B. Flatau, University of Maryland, College Park (United States)

Mehrdad N. Ghasemi-Nejhad, University of Hawai'i at Manoa (United States)

Victor Giurgiutiu, University of South Carolina (United States)

Nam Seo Goo, Konkuk University (Korea, Republic of)

Faramarz Gordaninejad, University of Nevada, Reno (United States)

Nakhiah C. Goulbourne, University of Michigan (United States)

Ryan L. Harne, The Ohio State University (United States)

Daniel J. Inman, University of Michigan (United States)

Hyung-Jo Jung, KAIST (Korea, Republic of)

M. Amin Karami, University at Buffalo (United States)

Jung-Ryul Lee, KAIST (Korea, Republic of)

Soobum Lee, University of Maryland, Baltimore County (United States)

Junrui Liang, ShanghaiTech University (China)

Wei-Hsin Liao, The Chinese University of Hong Kong (Hong Kong, China)

Zhu Mao, University of Massachusetts Lowell (United States)

David L. Mascareñas, Los Alamos National Laboratory (United States)

Gyuhae Park, Chonnam National University (Korea, Republic of)

Norbert Schwesinger, Technische Universität München (Germany)

Yi-Chung Shu, National Taiwan University (Taiwan)

Henry A. Sodano, University of Florida (United States)

Jiong Tang, University of Connecticut (United States)

Lihua Tang, The University of Auckland (New Zealand)

Dai-Hua Wang, Chongqing University (China)

Kon-Well Wang, University of Michigan (United States)

Ya S. Wang, Stony Brook University (United States)

Norman M. Wereley, University of Maryland, College Park (United States)

Byeng D. Youn, Seoul National University (Korea, Republic of)

Lei Zuo, Virginia Polytechnic Institute and State University (United States)

Session Chairs

- Energy Harvesting I: Nonlinear
 Jae-Hung Han, KAIST (Korea, Republic of)
 Ryan L. Harne, The Ohio State University (United States)
- Passive and Active Vibration Isolation/Attenuation I Alper Erturk, Georgia Institute of Technology (United States) Jeffrey L. Kauffman, University of Central Florida (United States)
- 3 Energy Harvesting II: Piezoelectric

 Lei Zuo, Virginia Polytechnic Institute and State University

 (United States)

Steven R. Anton, Tennessee Technological University (United States)

- 4 Morphing and Deployable Structures Andres F. Arrieta, Purdue University (United States) Oliver Huxdorf, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany)
- 5 Fluid-Structure Interaction Norbert Schwesinger, Technische Universität München (Germany) Alper Erturk, Georgia Institute of Technology (United States)

- Bistable Structures and Energy Harvesters
 Wei-Hsin Liao, The Chinese University of Hong Kong (Hong Kong, China)
 Lihua Tang, The University of Auckland (New Zealand)
- 7A Bio-Inspired Structures and Systems

 Mariantonieta Gutierrez Soto, University of Kentucky (United States)

 Suyi Li, Clemson University (United States)
- 7B Metamaterials and Metastructures I
 Alper Erturk, Georgia Institute of Technology (United States)
 Lihua Tang, The University of Auckland (New Zealand)
- 8A Energy Harvesting III: Piezoelectric
 Carlos De Marqui Jr., Universidade de São Paulo (Brazil)
 Byeng Dong Youn, Seoul National University (Korea, Republic of)
- 8B Acoustic/Fluid-Structure Interaction

 Shima Shahab, Virginia Polytechnic Institute and State University
 (United States)

 Amir Danesh-Yazdi, Penn State Behrend (United States)
- 9A Magnetic and Magneto/Electrorheological Systems Neil D. Sims, The University of Sheffield (United Kingdom) Barkan M. Kavlicoglu, Advanced Materials and Devices, Inc. (United States)
- Piezoelectric Materials and Systems I
 Steven R. Anton, Tennessee Technological University (United States)
- 10A Energy Harvesting IV: Design and Optimization Soobum Lee, University of Maryland, Baltimore County (United States) Lei Zuo, Virginia Polytechnic Institute and State University (United States)
- 10B Passive and Active Vibration Isolation Attenuation II Jae-Hung Han, KAIST (Korea, Republic of) Alper Erturk, Georgia Institute of Technology (United States)
- 11A Smart Sensing and Signal Processing for Diagnostics

 Heung Soo Kim, Dongguk University (Korea, Republic of)

 Fabrizio Barone, Università degli Studi di Salerno (Italy)
- 11B Piezoelectric Materials and Systems II

 Ahmet Ozkan Ozer, Western Kentucky University (United States)

 Shahrzad Towfighian, Binghamton University (United States)

12A Shape Memory Materials and Systems

Alexandros Solomou, Texas A&M University (United States) **Darren J. Hartl**, Texas A&M University (United States)

12B Metamaterials and Metastructures II

Carlos De Marqui Jr., Universidade de São Paulo (Brazil) M. Amin Karami, University at Buffalo (United States)

13A Energy Harvesting V: General

Shahrzad Towfighian, Binghamton University (United States) **Ya S. Wang**, Stony Brook University (United States)

13B Magnetorheological Systems

Jürgen Maas, Ostwestfalen-Lippe Universität of Applied Sciences (Germany)

Barkan M. Kavlicoglu, Advanced Materials and Devices, Inc. (United States)