

# PROCEEDINGS OF SPIE

## ***Second International Conference on Smart Materials and Nanotechnology in Engineering***

**Jinsong Leng  
Anand K. Asundi  
Wolfgang Ecke**  
*Editors*

**8–11 July 2009  
Weihai, China**

*Sponsored and Organized by*  
Harbin Institute of Technology (China)

*Cooperating Organizations*  
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SPIE

**Volume 7493**  
Part One of Three Parts

Proceedings of SPIE, 0277-786X, v. 7493

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Please use the following format to cite material from this book:

Author(s), "Title of Paper," in *Second International Conference on Smart Materials and Nanotechnology in Engineering*, edited by Jinsong Leng, Anand K. Asundi, Wolfgang Ecke, Proceedings of SPIE Vol. 7493 (SPIE, Bellingham, WA, 2009) Article CID Number.

ISSN 0277-786X  
ISBN 9780819478047

Published by

**SPIE**

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

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H. Zhou, J. Zhu, X. Xie, Anhui Univ. of Science and Technology (China)
- 7493 2M **Integrated piezoceramic transducers for imaging damage in composite laminates** [7493-205]  
C. T. Ng, The Univ. of Queensland (Australia) and Cooperative Research Ctr. for Advanced Composite Structures Ltd.; M. Veidt, The Univ. of Queensland (Australia); N. Rajic, Defence Science and Technology Organisation (Australia)
- 7493 2N **Effect of cement-polymer ratio on 1-3 piezoelectric composites** [7493-254]  
L. Guo, Univ. of Jinan (China); D. Xu, Shandong Univ. (China); S. Huang, Univ. of Jinan (China)

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**SESSION 32 PHOTONIC MATERIALS**

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- 7493 2O **An investigation of magnetic and fluorescent core-shell CdTe/Fe<sub>3</sub>O<sub>4</sub> nano-composites** [7493-189]  
J. Yang, J. Zhang, S. Xu, Z. Dai, Tianjin Polytechnic Univ. (China); B. Sun, Nankai Univ. (China); S. Sun, Tianjin Univ. (China); T. Feng, Y. Zi, J. Liu, C. Liang, H. Luo, Tianjin Polytechnic Univ. (China)
- 7493 2P **Scanning electron microscopy and atomic force microscopy of *Coscinodiscus granii* frustules treated by the liquid phase deposition** [7493-228]  
K. Umemura, Tokyo Univ. of Science (Japan); Y. Gao, Shanghai Institute of Ceramics (China); T. Nishikawa, Hyogo Prefectural Technology Ctr. for Agriculture, Forestry, and Fisheries (Japan); R. Kuroda, The Univ. of Tokyo (Japan) and ERATO-SORST (Japan)

- 7493 2Q **Optical properties of subwavelength wiregrid polarizer designed for GaN-based LED** [7493-330]  
G. Zhang, B. Cao, Q. Han, C. Wang, Soochow Univ. (China); B. Zhang, K. Xu, Suzhou Institute of Nano-tech and Nano-bionics (China)

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**SESSION 33 STRUCTURAL HEALTH MONITORING III**

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- 7493 2R **Investigation and detection on corrosion of concrete structure in marine environment** [7493-304]  
D. Zhang, J. Wu, J. Gao, Nanjing Univ. of Aeronautics and Astronautics (China)
- 7493 2S **Guided-wave-based detections of weld and crack in steel plates** [7493-389]  
M. Lu, X. Lu, L. Zhou, Z. Su, The Hong Kong Polytechnic Univ. (Hong Kong, China); L. Ye, The Hong Kong Polytechnic Univ. (Hong Kong, China) and The Univ. of Sydney (Australia)

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**SESSION 34 SHAPE MEMORY MATERIALS APPLICATION I**

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- 7493 2T **Effect of different cross-section types on mechanical properties and electromagnetic properties of carbon fibers reinforced plastics** [7493-40]  
X. Liu, S. Wang, Harbin Institution of Technology (China); Y. Yang, Institute of Coal Chemistry (China); W. Liu, Harbin Institution of Technology (China)
- 7493 2U **Effective thermo-mechanical properties and shape memory effect of CNT/SMP composites** [7493-379]  
Q. Yang, X. Liu, F. Leng, Beijing Univ. of Technology (China)
- 7493 2V **A preliminary study on anti-irradiation performance of epoxy shape memory polymer** [7493-395]  
X. Wu, Y. Liu, J. Leng, Harbin Institute of Technology (China)

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**SESSION 35 FUNCTIONAL MATERIALS III**

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- 7493 2W **Analysis of impact-sliding wear property of aluminum bronze against titanium alloy and 2Cr13 steel** [7493-373]  
Y. Wei, L. Wang, Harbin Institute of Technology (China)

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**SESSION 36 FIBER OPTIC SENSOR APPLICATION II**

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- 7493 2X **One kind of fiber Bragg grating displacement sensor using micro-elastic spring** [7493-292]  
X. Zhao, Dalian Univ. of Technology (China); G. Song, M. Fernandez, Univ. of Houston (United States); J. Ou, Dalian Univ. of Technology (China) and Harbin Institute of Technology (China)
- 7493 2Y **A novel fiber Bragg grating sensor interrogator based on time division multiplexing technique** [7493-384]  
Y. Dai, Z. Zhang, J. Leng, Harbin Institute of Technology (China); A. Anand, Nanyang Technological Univ. (Singapore)

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**SESSION 37 NANOCOMPOSITES II**

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- 7493 2Z **Furfural resin-based bio-nanocomposites reinforced by reactive nanocrystalline cellulose** [7493-315]  
C. Wang, S. Sun, G. Zhao, B. He, South China Univ. of Technology (China); H. Xiao, Univ. of New Brunswick (Canada) and South China Univ. of Technology (China)

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**SESSION 38 NOVEL SENSORS II**

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- 7493 30 **Artificial immune system based approach to fault diagnosis for wireless sensor networks** [7493-174]  
Y. Chen, S. Yuan, Y. Wang, J. Wu, Nanjing Univ. of Aeronautics and Astronautics (China)
- 7493 31 **Modal macro-strain vector based damage detection methodology with long-gauge FBG sensors** [7493-339]  
B. Xu, C. W. Liu, Hunan Univ. (China); S. F. Masri, Hunan Univ. (China) and Univ. of Southern California (United States)

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**SESSION 39 SENSOR APPLICATIONS**

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- 7493 32 **Surrounding rock mass stability monitoring of underground caverns in a geomechanical model test using FBG sensors** [7493-55]  
Y. Li, W. Zhu, W. Zheng, J. He, Shandong Univ. (China)
- 7493 33 **Application of fiber Bragg grating sensor for rebar corrosion** [7493-235]  
J. Geng, J. Wu, X. Zhao, Nanjing Univ. of Aeronautics and Astronautics (China)
- 7493 34 **A new diagnostic method of bolt loosening detection for thermal protection systems** [7493-368]  
W. Xie, S. Meng, J. Han, S. Du, B. Zhang, D. Yu, Harbin Institute of Technology (China)
- 7493 35 **Full-field measurement of dynamic stress by mechanoluminescence sensing film** [7493-383]  
C. Li, Kyushu Univ. (Japan); C.-N. Xu, Kyushu Univ. (Japan) and National Institute of Advanced Industrial Science and Technology (Japan) and Japan Science and Technology Agency (Japan); Y. Imai, N. Bu, National Institute of Advanced Industrial Science and Technology (Japan)

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**SESSION 40 SHAPE MEMORY POLYMER I**

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- 7493 36 **Modeling thermo-mechanical behaviors of reinforced shape memory polymer under cyclic loads** [7493-85]  
B. Zhou, Harbin Engineering Univ. (China) and Harbin Institute of Technology (China); X. Lan, Y. Liu, J. Leng, Harbin Institute of Technology (China)
- 7493 37 **Wrinkling atop shape memory polymer with patterned surface** [7493-320]  
W. M. Huang, Nanyang Technological Univ. (Singapore) and Shenyang Jianzhu Univ. (China); Y. Zhao, Nanyang Technological Univ. (Singapore); L. Sun, Shenyang Jianzhu Univ. (China); N. N. Ei, Nanyang Technological Univ. (Singapore); T. H. Tong, Cornerstone Research Group, Inc. (United States)

- 7493 38 **Synthesis and characterization of shape-memory polyurethane films with blood compatibility** [7493-366]  
C. Liang, L. Li, C. Mao, N. Zhou, J. Zhang, J. Shen, Nanjing Normal Univ. (China)

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**SESSION 41 ANALYSIS AND MODELING II**

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- 7493 39 **Nonparametric dynamic modeling of a non-linear frame structure with MR dampers** [7493-338]  
B. Xu, Z. G. Huang, Hunan Univ. (China); S. F. Masri, Hunan Univ. (China) and Univ. of Southern California (United States)

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**SESSION 42 NANOMATERIALS APPLICATION II**

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- 7493 3A **Effect of nano BaCO<sub>3</sub> on pyrolytic reaction of phenol-formaldehyde resin** [7493-37]  
X. Zhang, Q. Ma, Z. Zhang, W. Peng, M. Zhang, Central South Univ. of Forestry and Technology (China)
- 7493 3B **Reliability assessment of long span bridges based on structural health monitoring: application to Yonghe Bridge** [7493-120]  
S. Li, H. Li, J. Ou, H. Li, Harbin Institute of Technology (China)
- 7493 3C **Improving the damping ability by the addition of Nano SiO<sub>2</sub> to the concrete materials** [7493-130]  
D. Zou, T. Liu, J. Teng, Harbin Institute of Technology (China)
- 7493 3D **Investigation on anti-corrosion property of nano-TiO<sub>2</sub> fluoro-carbon coatings** [7493-274]  
Y. Qi, Z. Zhang, L. Wang, X. Du, Dalian Maritime Univ. (China)
- 7493 3E **Effects of nanoparticles on hygrothermal property of epoxy resin composites** [7493-281]  
X. Lv, Harbin Institute of Technology (China) and Northeast Forestry Univ. (China); R. Wang, W. Liu, Harbin Institute of Technology (China)

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**SESSION 43 RHEOLOGY**

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- 7493 3F **Oscillatory shear rheology of chiral liquid crystal polymers** [7493-116]  
Z. Cui, Fayetteville State Univ. (United States); Q. Wang, Univ. of South Carolina (United States); J. Su, Xuzhou Normal Univ. (China)
- 7493 3G **Performance evaluation of 6WD military vehicle featured by MR suspension system considering lumped parameter model of MR damper** [7493-243]  
S. H. Ha, Q.-H. Nguyen, S.-B. Choi, E.-J. Rhee, P.-S. Kang, Inha Univ. (Korea, Republic of)
- 7493 3H **The study on leakage reappearance test of high pressure hose for power steering system** [7493-359]  
G.-C. Lee, H.-E. Kim, J.-W. Park, Korea Institute of Machinery and Materials (Korea, Republic of); W.-W. Jeong, J.-H. Lee, Hyundai and Kia Corporate Research and Development Div. (Korea, Republic of); Y.-H. Lim, Hwaseung R&A Co., Ltd. (Korea, Republic of); K.-T. Hwang, Y.-S. Lee, J.-H. Kim, Chungnam National Univ. (Korea, Republic of)

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**SESSION 44 ELECTROACTIVE MATERIAL APPLICATION III**

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- 7493 3I **Position control of ionic polymer metal composite actuator based on neuro-fuzzy system** [7493-307]  
T.-K. Nguyen, Y.-S. Yang, I.-K. Oh, Chonnam National Univ. (Korea, Republic of)

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**SESSION 45 STRUCTURAL HEALTH MONITORING IV**

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- 7493 3J **Solid biopolymer electrolytes came from renewable biopolymer** [7493-45]  
N. Wang, X. Zhang, Z. Qiao, H. Liu, Tianjin Polytechnic Univ. (China)
- 7493 3K **Delamination detection in CFRP laminates using FOD sensor** [7493-148]  
F. Li, K. Kageyama, H. Murayama, I. Ohsawa, The Univ. of Tokyo (Japan)
- 7493 3L **Development and implementation of a remote real-time monitoring system for cable force of Tianjin Yonghe cable-stayed bridge** [7493-178]  
H. Li, H. Li, Harbin Institute of Technology (China); G. Liu, Tianjin Highway Engineering Design Institute (China); J. Ou, Harbin Institute of Technology (China) and Dalian Univ. of Technology (China)

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**SESSION 46 MEMBRANES AND ELASTOMERS**

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- 7493 3M **Nanocomposite materials based on sulfonated polyarylenethioethersulfone and sulfonated polybenzimidazole for proton exchange membrane fuel cell applications** [7493-128]  
Z. Bai, N. Venkat, Univ. of Dayton (United States); S. B. Juhl, AFRL/RXBN (United States); S. J. Rodrigues, AFRL/RZPS (United States); T. D. Dang, AFRL/RXBN (United States)
- 7493 3N **Ionic polymer metal composite actuators employing irradiation-crosslinked sulfonated poly(styrene-ran-ethylene) as ion-exchange membranes** [7493-166]  
X.-L. Wang, T.-H. Cheng, L. Xu, I.-K. Oh, Chonnam National Univ. (Korea, Republic of)
- 7493 3O **Electro-mechanical analysis of a dielectric elastomer membrane undergoing large deformation** [7493-278]  
T. He, C. Chen, L. Cui, Lanzhou Univ. of Technology (China)
- 7493 3P **Analysis of electromechanical stability on dielectric elastomer actuators under large deformations condition** [7493-380]  
L. Liu, S. Sun, K. Yu, Z. Zhang, Y. Liu, J. Leng, Harbin Institute of Technology (China)

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**SESSION 47 NANOMATERIALS II**

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- 7493 3Q **Isotropic conductive adhesives filled with silver nanowires** [7493-263]  
Y. Tao, Y. P. Xia, Jiangsu Polytechnic Univ. (China); G. Q. Zhang, Zhejiang Sci-Tech Univ. (China); H. P. Wu, Jiangsu Polytechnic Univ. (China) and Zhejiang Sci-Tech Univ. (China); G. L. Tao, Jiangsu Polytechnic Univ. (China)



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**SESSION 48      FUNCTIONAL COMPOSITE II**

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- 7493 3R      **Preparation of calcium and titanium precipitation particles and its high electrorheological activity** [7493-301]  
K. Wu, Y. Cheng, Z. Song, G. Xu, P. Cui, Ningbo Institute of Material Technology and Engineering (China)
- 7493 3S      **The effect of silicon carbide nanoparticles on the multifunctionality of epoxy polymers and CFRPs** [7493-386]  
P. Karapappas, A. Baltopoulos, A. Vavouliotis, E. Fiamegkou, N. Athanasopoulos, I. Fotiou, V. Kostopoulos, Univ. of Patras (Greece); E. Borsella, F. Fabbri, ENEA/FIM (Italy)

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**SESSION 49      MAGNETIC MATERIALS I**

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- 7493 3T      **Evolution of surface structure of bilayer oleic acid-coated Fe<sub>3</sub>O<sub>4</sub> nanoparticles during ethanol washing** [7493-104]  
H. Peng, K. Yang, Y. Wen, Sichuan Univ. (China)
- 7493 3U      **Design and test of a micro-displacement actuator based on giant magnetostrictive material** [7493-176]  
L. Shao, Nanjing Institute of Astronomical Optics and Technology (China) and Graduate School of the Chinese Academy of Sciences (China); D. Yang, Nanjing Institute of Astronomical Optics and Technology (China); B. Yang, Jiao Tong Univ. (China); K. Chen, Nanjing Institute of Astronomical Optics and Technology (China)
- 7493 3V      **A biosensing of Toxoplasma gondii DNA with CdTe/Fe<sub>3</sub>O<sub>4</sub> dual functional quantum dot as reporter group** [7493-184]  
C. Liang, S. Xu, J. Yang, J. Zhang, Z. Dai, Tianjin Polytechnic Univ. (China); B. Sun, Nankai Univ. (China); S. Sun, Tianjin Univ. (China); T. Feng, Y. Zi, J. Liu, H. Luo, Tianjin Polytechnic Univ. (China)

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**SESSION 50      MICROSTRUCTURE AND MICROSYSTEM**

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- 7493 3W      **A novel nano-gripper compliant mechanism with parallel movement of gripping arms** [7493-196]  
M. M. K. Helal, L. Sun, L. Chen, Harbin Institute of Technology (China)
- 7493 3X      **An analytical model for nanomechanical behavior of microcantilever-DNA chip** [7493-321]  
Z.-Q. Tan, Shanghai Institute of Applied Mathematics and Mechanics (China); J.-J. Li, N.-H. Zhang, Shanghai Institute of Applied Mathematics and Mechanics (China) and Shanghai Univ. (China)

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**SESSION 51      CARBON MATERIALS APPLICATION II**

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- 7493 3Y      **Analysis of elastic wave in carbon nanotubes using continuum mechanics and molecular dynamic simulations** [7493-169]  
Y.-G. Hu, K. M. Liew, City Univ. of Hong Kong (Hong Kong, China); Q. Wang, Univ. of Manitoba (Canada)

- 7493 3Z **Multi-walled carbon nanotubes under protons beam irradiation** [7493-372]  
A. Ishaq, A. R. Sobia, L. Yan, X. Zhou, D. Zhu, Shanghai Institute of Applied Physics (China)

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**SESSION 52 SHAPE MEMORY POLYMER II**

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- 7493 40 **Modeling the shape memory effect of shape memory polymer** [7493-84]  
B. Zhou, Harbin Engineering Univ. (China) and Harbin Institute of Technology (China); Y. Liu, Harbin Institute of Technology (China); Z. Wang, Harbin Engineering Univ. (China); J. Leng, Harbin Institute of Technology (China)
- 7493 41 **Fabrication and properties of shape-memory polymer coated with conductive nanofiber paper** [7493-376]  
H. Lu, Y. Liu, Harbin Institute of Technology (China); J. Gou, Univ. of Central Florida (China); J. Leng, Harbin Institute of Technology (China)

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**SESSION 53 SMART MATERIALS APPLICATIONS II**

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- 7493 42 **Collinear electrodes on the surface of electrostrictive materials** [7493-70]  
Q. Jiang, Nanjing Univ. of Aeronautics and Astronautics (China) and Nantong Univ. (China); C.-F. Gao, Nanjing Univ. of Aeronautics and Astronautics (China)
- 7493 43 **Evaluation of vibration control performance of smart hull structure featuring piezoelectric composite actuators** [7493-239]  
J. W. Sohn, O.-C. Kwon, S.-B. Choi, Inha Univ. (Korea, Republic of)
- 7493 44 **The free vibrations of layered thin film plates and applications in resonator analysis** [7493-314]  
J. Wang, J. Liu, J. Du, D. Huang, Ningbo Univ. (China); W. Chen, Zhejiang Univ. (China)
- 7493 45 **Microencapsulation of self-healing agents with melamine-urea-formaldehyde by the Shirasu Porous Glass (SPG) emulsification technique** [7493-327]  
X. Liu, Kumoh National Institute of Technology (Korea, Republic of) and Tianjin Polytechnic Univ. (China); J. K. Lee, Kumoh National Institute of Technology (Korea, Republic of); M. R. Kessler, Iowa State Univ. (United States)

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**SESSION 54 THERMAL**

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- 7493 46 **Study of the thermal property of copper oxide nanowires** [7493-261]  
C. F. Dee, Univ. Kebangsaan Malaysia (Malaysia); Y. Y. Wong, National Chiao Tung Univ. (Taiwan, China); K. P. Lim, Univ. Putra Malaysia (Malaysia); B. Y. Majlis, Univ. Kebangsaan Malaysia (Malaysia)
- 7493 47 **Insertion of intelligent hydrogel into silicone resin for thermal control applications** [7493-309]  
H. Wei, D. Ge, Z. Fan, C. Liu, X. He, Y. Li, Harbin Institute of Technology (China)
- 7493 48 **Thermal stress reduction of bilayered systems by means of linearly graded interlayer** [7493-311]  
B. Wang, Fudan Univ. (China); Y. Li, Univ. of Michigan (United States); Y. Huo, Fudan Univ. (China)

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**SESSION 55    SHAPE MEMORY MATERIALS APPLICATION II**

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- 7493 49    **Hybrid finite element formulation for electrostrictive materials: static and buckling analysis of beam** [7493-118]  
J. R. G. N., Indian Institute of Technology Madras (India)
- 7493 4A    **Investigation of thermal distortion and control of spacecraft based on shape memory materials** [7493-186]  
H. Sun, X. Du, H. Tan, Ctr. for Composite Materials and Structures (China)
- 7493 4B    **Effect of structure on the optical properties of Ni-Mn-Ga alloy: experimental and theoretical investigation** [7493-300]  
Z. Y. Gao, Harbin Institute of Technology (China); C. Liu, Daqing Petroleum Institute (China); C. L. Tan, Harbin Univ. of Science and Technology (China); J. H. Sui, W. Cai, Harbin Institute of Technology (China)

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**SESSION 56    MAGNETIC MATERIALS II**

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- 7493 4C    **Study on the bifurcation and chaos of giant magnetostrictive actuators** [7493-167]  
H. Zeng, W. Li, Xiamen Univ. of Technology (China)
- 7493 4D    **Electromagnetic design of magneto-rheological mount and its open-loop semi-active control** [7493-173]  
L. Zheng, Y. Li, Z. Deng, Chongqing Univ. (China)
- 7493 4E    **Fabrication, characterization and in-vitro cytotoxicity of magnetic nanocomposite polymeric film for multi-functional medical application** [7493-285]  
L. Zhao, Tsinghua Univ. (China); X. Xu, Beijing Univ. of Chinese Medicine (China); X. Wang, X. Zhang, F. Gao, J. Tang, Tsinghua Univ. (China)
- 7493 4F    **Polymer functionalization with manganites** [7493-328]  
V. Sandu, S. Popa, I. Ivan, C. Plapcianu, National Institute of Materials Physics (Romania); E. Sandu, National Institute of Physics and Nuclear Engineering (Romania); N. Hurduc, I. Nor, Technical Univ. Gheorghe Asachi (Romania)

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**SESSION 57    NANOCOMPOSITES III**

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- 7493 4G    **Fabrication and characterization of nanoclay modified PMR type polyimide composites reinforced with 3D woven basalt fabric** [7493-353]  
J. Xie, Y. Qiu, Donghua Univ. (China)

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**SESSION 58    MATERIALS CHARACTERIZATION III**

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- 7493 4H    **Structure evolution and phase development of NKN-BNT piezoelectric ceramics** [7493-249]  
H. Fan, L. Liu, Northwestern Polytechnical Univ. (China)
- 7493 4I    **The flaw-detected coating and its applications in R&M of aircrafts** [7493-358]  
F. Hu, M. Liu, Z. Lü, Xi'an Jiaotong Univ. (China)

- 7493 4J **Ultra thin fiber laser accelerometer for structure vibration detection** [7493-364]  
W. Zhang, X. Li, F. Zhang, F. Li, Y. Liu, Institute of Semiconductors (China)

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**SESSION 59 NANOMATERIAL APPLICATION III**

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- 7493 4K **Design of lath-shaped tool in defective nanostructure removal from digital touch-panel surfaces** [7493-259]  
P. S. Pa, National Taipei Univ. of Education (Taiwan, China)

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**SESSION 60 SMART MATERIALS APPLICATIONS III**

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- 7493 4L **Feasibility investigation of self-healing cementitious composite using oil core/silica gel shell passive smart microcapsules** [7493-246]  
Z. Yang, J. Hollar, X. He, X. Shi, Montana State Univ. (United States)
- 7493 4M **Marine biofouling on the fluorocarbon coatings comprising PTFE powders** [7493-279]  
Z. Zhang, Y. Qi, H. Liu, Z. Zhang, Dalian Maritime Univ. (China)
- 7493 4N **Heat treatment of piezoelectric Pb(ZrTi)O<sub>3</sub> ceramic fibers prepared with continuous spinning** [7493-363]  
Z. X. Xiong, J. Pan, H. Xue, M. F. Mai, H. Qiu, L. F. Chen, Xiamen Univ. (China)
- 7493 4O **Thermoset shape-memory polymer nanocomposite filled with nanocarbon powders** [7493-382]  
X. Lan, Y. Liu, J. Leng, Harbin Institute of Technology (China)

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**SESSION 61 STRUCTURAL HEALTH MONITORING V**

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- 7493 4P **Cured shape prediction of the bistable hybrid composite laminate** [7493-394]  
F. Dai, B. Zhang, S. Du, Harbin Institute of Technology (China)
- 7493 4Q **Effectively tunable dispersion compensation based on chirped fiber Bragg gratings using electroactive polymer** [7493-397]  
Y. Dai, Z. Zhang, L. Liu, J. Leng, Harbin Institute of Technology (China); A. Asundi, Nanyang Technological Univ. (Singapore)

## Part Three

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**POSTER SESSION I**

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- 7493 4R **Upconversion emission of Er<sup>3+</sup>/Yb<sup>3+</sup>-codoped silicate glass micro-particle under high excitation intensity** [7493-32]  
J. Wang, N. Li, Beijing Univ. of Technology (China); L. Wang, Xingtai Medical College (China); P. Duan, Beijing Univ. of Technology (China)

- 7493 4S **Experimental study on the output characteristics of piezoelectric micro-displacement actuator** [7493-90]  
T. Han, G. Li, J. Shen, Ningbo Univ. (China)
- 7493 4T **Investigation on modeling and controability of a magnetorheological gun recoil damper** [7493-94]  
H. Hu, Jiaying Univ. (China) and School of Mechanical Engineering (China); J. Wang, Jiaying Univ. (China); J. Wang, School of Mechanical Engineering (China); S. Qian, Jiaying Univ. (China); Y. Li, School of Mechanical Engineering (China)
- 7493 4U **Preparation and microwave absorption property of the core-nanoshell composite absorbers with magnetic fly-ash hollow cenosphere as nuclear** [7493-95]  
R.-X. Che, Y.-J. Ni, Dalian Jiaotong Univ. (China)
- 7493 4V **Study on magneto-mechanical coupling model for giant magnetostrictive actuator** [7493-96]  
G. Li, T. Han, L. Wang, Ningbo Univ. (China)
- 7493 4W **An ionic polymer-metal composite actuator based on PSMI-incorporated PVDF with chemical stability and performance durability** [7493-102]  
J. Lu, Chonnam National Univ. (Korea, Republic of) and Southwest Jiaotong Univ. (China); S.-G. Kim, Korea Research Institute of Chemical Technology (Korea, Republic of); S. Lee, I.-K. Oh, Chonnam National Univ. (Korea, Republic of)
- 7493 4X **External characteristics detection and analysis of magnetically controlled shape memory alloy** [7493-110]  
Y. Cai, Shenyang Univ. of Technology (China) and Liao Ning Institute of Science and Technology (China); C. Lin, Shenyang Univ. of Technology (China)
- 7493 4Y **Bioelectrochemical activity of an electroactive macromolecular weight coenzyme derivative** [7493-115]  
P. Liu, H. Zheng, P. Nie, Y. Wei, Z. Feng, T. Sun, Tianjin Polytechnic Univ. (China)
- 7493 4Z **Beam vibration control using electro-active paper sensor** [7493-132]  
J. Kim, H. S. Kim, H. C. Lee, Catholic Univ. of Daegu (Korea, Republic of); J. Kim, Inha Univ. (Korea, Republic of)
- 7493 50 **Preparation and electroactive performance of IPMC** [7493-138]  
G. Gong, Y. Huang, Harbin Institute of Technology (China); D. Liu, Harbin Univ. of Science and Technology (China); Y. Zhang, Harbin Institute of Technology (China)
- 7493 51 **High birefringence photonic crystal fiber design** [7493-141]  
F. Shi, M. Li, Y. Zhao, L. Zhao, Harbin Institute of Technology (China)
- 7493 52 **Preparation and characterization of high contrast electrophoretic display suspension containing charged black-and-white nanoparticles** [7493-149]  
X.-N. Yao, J.-P. Wang, X.-X. Zhang, X.-C. Wang, Tianjin Polytechnic Univ. (China)

- 7493 53 **Research on the optical fiber's photosensitivity influenced by the doping process** [7493-153]  
F. Tu, Yangtze Optical Fibre and Cable Co., Ltd. (China) and Huazhong Univ. of Science and Technology (China); J. Luo, J. Guo, C. Yang, X. Qian, Yangtze Optical Fibre and Cable Co., Ltd. (China); D. Liu, Huazhong Univ. of Science and Technology (China) and Wuhan National Lab. for Optoelectronic (China)
- 7493 54 **Non direction high-frequency underwater transducer** [7493-160]  
G. Wang, Beijing Information Science and Technology (China); L. Qin, Beijing Univ. of Posts and Telecommunications (China); L. K. Wang, Beijing Information Science and Technology (China)
- 7493 55 **A comparative study on vibration analysis of beams treated with active constrained layer damping using different assumed modes methods** [7493-204]  
M. Wang, G. Meng, J. Xu, Shanghai Jiao Tong Univ. (China)
- 7493 56 **Study on damping property of epoxy-matrix with  $\text{PbZr}_{0.47}\text{Ti}_{0.53}\text{O}_3$  piezoelectric film effect** [7493-210]  
Y. Qin, W. Mao, Z. Huang, D. Guo, Wuhan Univ. of Technology (China)
- 7493 57 **Study on a new semi-active vibration isolation system** [7493-214]  
K. Wei, Hunan Institute of Engineering (China) and Shanghai Jiao Tong Univ. (China); G. Meng, Shanghai Jiao Tong Univ. (China); H. You, Y. Liu, Hunan Institute of Engineering (China)
- 7493 58 **In-situ formation of gold nanoparticles on self-assembly monolayer modified silicon substrate** [7493-215]  
L. Qi, C. Chen, S. Liu, Wuhan Institute of Technology (China)
- 7493 59 **Sensing performance of magnetic shape memory alloy actuator with self-sensing** [7493-219]  
B. Sun, Y. Ding, J. Lu, F. Wang, Shenyang Univ. of Technology (China)
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## Preface

The Second International Conference on Smart Materials and Nanotechnology in Engineering was successfully held , –11 July 2009 in Weihai, China. This unique conference offered many opportunities to communicate with colleagues from a variety of disciplines in universities, companies, factories, and governments from all over the world. As a premier event, this conference promised great excitement, inspiration, and benefits. We hope the conference will be a series that encompasses and bridges the rapidly evolving smart materials and the cutting edge nanotechnology for varied applications.

In the last decade, a wide range of novel smart materials have been produced for aerospace, transportation, telecommunications, and domestic applications. Meanwhile, nanotechnology is rapidly developing and it permits control of matter at the level of atoms and molecules which form the building blocks of smart materials. Thus the combination of these two fields provides many advantages, realizes novel designs that could not be achieved in traditional engineering, and offers greater opportunities as well as challenges.

This conference deals with the integration of smart materials and nanotechnology for applications ranging from bioengineering to photonics, with emphasis on the application in aerospace engineering. It also addresses and predicts novel developments in this field. It discusses various topics including: shape-memory alloys and polymer, electro-active polymer, piezo-materials, electro and magneto restrictive materials and fluids, fiber optic sensor, MEMS sensors and actuators, sensors and actuators, thermo materials, photonic materials, dielectric elastomers, nanocomposites and others.

We received 750 abstracts in response to the call for submissions. Of these we invited authors of 390 abstracts to submit full papers. Also, 7 plenary speakers and 54 keynote speakers were selected to inform and inspire the attendees. 280 papers were presented in 61 oral sessions and 110 papers were presented in 3 poster sessions. The full papers we received were then sent for peer reviews and 257 manuscripts were selected to be published in this SPIE volume.

We would like to take this opportunity to thank the organizing committee, the cooperating organizations, the international scientific committee and every attendee whose support, dedication, and cooperation make this event more exciting, inspiring, and fruitful. This SPIE volume would not have been possible without the support of many colleagues. First and foremost, we wish to express our appreciation for SPIE staff for giving us the opportunity to organize the proceedings with SPIE. Next we thank the reviewers who spent hours reviewing papers in the editorial process.

We hope all the participants benefited from this conference and it should be very interesting to see how the smart materials and nanotechnology field will be further developed at the Third International Conference on Smart Materials and Nanotechnology in Engineering in 2011.



**Honorary Chair**

**Prof. Shanyi Du**

Member of Chinese Academy  
of Engineering (CAE)  
Harbin Institute of Technology  
(China)



**Chair**

**Prof. Jinsong Leng**

Harbin Institute of  
Technology (China)