

International Conference on Micro & Nano Systems

ICMNS 2002

August 11-14, 2002, Kunming, China

Final Program

Organized by

Chinese Society of Theoretical and Applied Mechanics (CSTAM)
State Key Laboratory of Nonlinear Mechanics (LNM, CAS)
Center for Micro and Nano System, CUHK, Hong Kong
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August 11, 2002 (Sunday)

- 9:00 Welcome and Opening Speech
- 9:30 **Plenary Speech** “**Paths Linking Micro and Nano Sciences and Technologies**”
Prof. Chih-Ming Ho, UCLA, USA
- 10:20 Coffee Break
- 11:00 **Plenary Speech** “**Harnessing the Engines of Life: The Art and Science of Engineering Hybrid Nanofabricated Mechanical Devices**”
Prof. Carlo Montemagno, UCLA, USA
- 11:50 Lunch

Session 1: Micro/Nano Fluidics & Bio-MEMS

Room: A

Session Chair & Co-Chair: W.C. Tang & D.F. Cui

- 13:30 “Integrated Micro/Nano Fluidics for Mass-Spectrometry Protein Analysis” (Invited)**
Prof. Yu-Chong Tai, CalTech, USA
- 14:00 “Endothelial Cells: The Living Sensors and Actuators”
Tzung K. Hsiai, Michael Ing, Juliana Hwang, Adler Salazar, Sung K. Cho, Pak Wang, Chih-Ming Ho, Mohamad Navab
- 14:20 “Bio-Electrochemical Characterization of Micromachined Two-Electrode Cell Sensors”
Xin-Xia Cai, Jonathan M. Cooper, Norbert Klauke, Andrew Glidle, Li Cui, Da-Fu Cui
- 14:40 “Micro Flow Cytometers with Buried SU-8/SOG Optical Waveguides for On-line Cell Counting”
Che-Hsin Lin, Guan-Liang Chang, Gwo-Bin Lee
- 15:00 “Enhancing Antitumor Effect of Adriamycin Nanoparticle -Lipiodol Emulsion by Pretreating Tumor Cells with Diethyldithiocarbamate”
Dao-Cheng Wu, Ming-Xi Wan, Yong-Feng Du, Jian Mo, Hong Wu
- 15:20 Coffee Break**
- 15:35 “Micro-systems for Optical Protein-Chip”
Gang Jin, Zhan- Hui Wang
- 15:55 “A Micropipet Aspiration System to Measure the Kinetics of Selectin/Ligand Interactions”
Jun Huang, Juan Chen, Mian Long, Cheng Zhu
- 16:15 “Driven by Electroosmotic Flow (EOF) in Poly (dimethylsiloxane)(PDMS)/Glass

- Microchip”
Qiang Zhao, Da-Fu Cui, Li Wang, Ming Wang, Xiang Chen
- 16:35 “Fabrication of Microfluidic Electrocontrolled Chip in Polydimethylsiloxane (PDMS)”
Ming Wang, Da-Fu Cui, Li Wang, Xiang Chen, Qiang Zhao
- 16:55 “Development and Characterization of DNA Hybridization Reaction on PDMS Microchip”
Xiang Chen, Da-Fu Cui, Li Wang, Ming Wang, Qiang Zhao
- 17:15 “A Model of Directed Binding to Microtubules by Kinesin and Ncd Motor Proteins”
H. Bolterauer, J.A. Tuszynski
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Session 2: Micro & Nano Systems I

Room: B

Session Chair & Co-Chair: T.S. Leu & Hui-Kai Xie

- 13:30 “Towards Future Nanoelectronic Device —Nanostructuring Based on SPM and Bottom-up Assembly” (Invited)**
Prof. Zhongfan Liu, Peking Univ., China
- 14:00 “Research on a Novel Integrated Pressure Sensor for High Temperature”
Wei Zhang, Jing-Bin Jia, Bei Liu
- 14:20 “Fabrication of Thin Film Vanadium Oxide for Microbolometer”
Chen-Kuei Chung, Luh-Huew Wu, Tzong-Sheng Lee
- 14:40 “An Uncooled Microbolometer Infrared Detector Based on Polycrystalline Silicon Germanium Thin Film”
Liang Dong, Rui-Feng Yue, Li-Tian Liu
- 15:00 “A Micromachined Piezoresistive High-g Accelerometer with High Sensitivity and Wide Frequency-Band: Design and Modeling”
Zuan-Kai Wang, Deng-Gang Zong, De-Ren Lu, Bin Xiong, Yue-Lin Wang, Minhang Bao
- 15:20 Coffee Break**
- 15:35 “Structural Failure Analysis and Numerical Simulation of Micro-accelerometers under Impulsive Loading”
Yu-Qun Hu, Li-Sen Wang, Zhao-Jun Zeng, Yi-Long Hao, Ya-Pu Zhao
- 15:55 “A Novel Structure of Passive Ring Resonator on Silicon Substrate”
Wei Guo, Zhong-He Jin, Yan-Zhe Tang, Yi-Bin Xu, Zhong-Sheng Cui, Yue-Lin Wang
- 16:15 “Phase and Vibration Analysis for a CMOS-MEMS Gyroscope”
Hui-Kai Xie, Gary K. Fedder, Zhiyu Pan, Wilhelm Frey
- 16:35 “A New Z-axis Silicon Micromachined Vibrating Gyroscope”
An-Ping Qiu, Shou-rong Wang, Bai-ling Zhou
- 16:55 “Micro-machined Rate Gyroscope”
Yan Su, Xiao-Feng Jin, Shou-Rong Wang, Bai-Ling Zhou
- 17:15 “Simulation of Vibratory Micromachined Gyroscope with Fence Structure”
Lu-Feng Che, Bin Xiong, Xiao-Zhen Huang, Yue-Lin Wang

Session 3: Micro & Nano Systems II

Room: C

Session Chair & Co-Chair: Shou-Wen Yu & S.S. Xie

13:30 “Progress in Quantum Computing and Its Impact on Research and Education”

(Invited)

Prof. T. J. Tarn, Washington University, USA

14:00 “Teleoperation and User Interface for Manipulation at Nano Scale”

Max Meng

14:20 “Surface Finish and Performances of Read/Write Heads by Using Ultra-Fine Diamond Slurry in Polishing Process”

Jian-Bin Luo, Feng Gao, Zhi-Meng Hu, Hong Lei

14:40 “Chemical Mechanical Polishing of Computer Hard Disk Substrate in Colloidal SiO₂ Slurry”

Hong Lei, Jian-Bin Luo, Guos-Shun Pan, Jun-Jie Ma, Feng Gao, Xin-Chun Lu, Xif-Fu Tu, Liang Fang, Kwok H. Yuen, Neng Si-Ma

15:00 “Optical Sensing of Volatile Organic Compounds Using Metalloporphyrins Langmuir-Blodgett Films”

Muhamad Mat Salleh, Akrajas, Muhammad Yahaya

15:20 Coffee Break

15:35 “A Model of Computation of Elastic and Plastic Contact Considering Adhesion Effect”

Qun-Yang Li, Shou-Wen Yu

15:55 “Nanotubes of Conducting Polyaniline and Polypyrrole”

Mei-Xiang Wan, Kun Huang, Li-Juan Zhang, Zhi-Ming Zhang, Zhi-Xiang Wei, Yong-Sheng Yang

16:15 “Fabrication of Nanorollers”

Yu-Jun Zhang, Yuan-Zhong Hu, Hui Wang, Jie Hu, Peng Li, Lan Huang

16:35 “Positioning Tables for Nanofabrication”

Pei-Zhang Yuan, Xiao-Fan Li, Zhong Wang, Chen Yao, Yu Luo

16:55 “Lubrication Theory for Thin Film Lubrication Accounting for the ordered Film Model”

Chao-Hui Zhang, Shi-Zhu Wen, Jian-Bin Luo

17:15 “Nano-microscale Characterizations to Al₂O₃/SiC nano Ceramic Composites”

Zhong Ling

17:35 “Study on Mechanical Properties of Nanocrystal Surface Layer of an Aluminum Alloy”

You-Li Ma, Ji-Jia Xie, You-Shi Hong, Zhong-Min Deng

18:30 Reception

August 12, 2002 (Monday)

Session 4: Bio-MEMS

Room: A

Session Chair & Co-Chair: G. B. Lee & S.X. Guo

- 9:00 “MEMS-based Temperature Control Systems for DNA Amplification”
Chia-Yen Lee, Gwo-Bin Lee, Heng-Hui Liu, Fu-Chun Huang
- 9:20 “The Construction of Layered Architectures of Dendrimers—Adsorption Layers of Amino-terminated Dendrimers on 3-Mercaptopropionic Acid Self-assembled Monolayer Formed on Au”
Hiroki Nagaoka, Toyoko Imae
- 9:40 “Perylene Derivative Based Self-Assembled Monolayer on ITO Electrode Surfaces”
Wen-Long Wang, Jin Zhai, Lei Jiang, Feng-Lian Bai, Yan-Jie Ren, Bo Zhang, Sheng-Min Cai
- 10:00 “Analysis of Thermal Cycling in Micro-PCR Chip”
Wei Wang, Zhi-Xin Li, Zeng-Yuan Guo
- 10:20 Coffee Break**
- 10:35 “Design and CFD Analysis of the Flow in a Micro-fabricated PCR-Chip for Leukemia Diagnosis”
Qiao-Ling Zheng, Chun-Yang Xiong, Jing Fang, Qiang Shen, Dacheng Zhang
- 10:55 “Design and Microfabrication of Biochemical Reaction Chip”
Zhan Zhao, Da-Fu Cui, Li Wang, Zheng Cui
- 11:15 “Medical Image Compression Using Tree-Structured Vector Quantization and Fuzzy C-Means”
Sookpotharom Supot, Kitjaidure Yuttana, Sangworasil Manas
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Session 5: Micro & Nano Systems I

Room: B

Session Chair & Co-Chair: C.Q. Chung & Tong-Yi Zhang

- 9:00 “Fabrication and Properties of Aligned Multi-Walled Carbon Nanotubes” (Invited)**
Prof. S. S. Xie, Inst. of Phys., CAS, China
- 9:30 “Symmetrical Design and Analysis of a Novel MEMS-based 1×2 Optical Switch”
Cong-Shun Wang, Jian Cao, Sheng Chang, Jing Fang, Zhen-Chuan Yang, Da-Cheng Zhang
- 9:50 “Simulation, Optimization and Measurement of MEMS Torsion Micro Mirrors for Optical MEMS Application”
Da-Chao Li, Zhi-Yong Xiao, Wen-Gang Wu, Yong Yuan, Shi-Jiu Jin, Yi-Long Hao
- 10:10 “Electromechanical Studies on Micro Torsion-Mirror Actuators with Monolithically

Integrated Fiber Self-Holding Structures”

Wen-Gang Wu, Zhi-Yong Xiao, Da-Chao Li, Pei-Yu Zhang, Yi-Long Hao, Guo-Ying Wu

10:30 Coffee Break

10:45 “Failure Modes of Doubly Supported Capacitive RF MEMS Switches”

Li-Xian Zhang, Jin-Wen Zhang, Ya-Pu Zhao, Tong-Xi Yu

11:05 “Failure Mechanisms of a Micro Fabricated Relay”

Xiao-Dong Hu, Jing Pan, Miao Lu, Xue-Feng Zou, Hai-Feng Lin, Zheng-Ping Zhao

11:25 “An Analytical Model for High Performance Capacitive RF MEMS Switch Design”

Ze-Wen Liu, Xiao-Feng Lei, Yun Xuan, Zhi-Jian Li, Li-Tian Liu

11:45 “Numerical Simulation of a Bulk Micromachined Relay with Lateral Contact”

Zhen-Chuan Yang, Zhi-Hong Li, Zhi-Yong Xiao, Yi-Long Hao, Guo-Ying Wu

Session 6: Micro & Nano Systems II

Room: C

Session Chair & Co-Chair: T.K. Hsiai & Yuan-Zhong Hu

9:00 “Sensing and Control of Robotic Manipulation in a Nano Environment” (Invited)

Prof. Ning Xi, Michigan State University, USA

9:30 “The Effects of Experimental Parameters on the Orientation of AlN Nano Films”

Xiao-Hong Xu, Hai-Shun Wu, Cong-Jie Zhang, Fu-Qiang Zhang, Zuo-Yi Li

9:50 “Surface Roughness Effect on the Tensile Strength of Micromachined Polysilicon Films”

Jian-Ning Ding, Ji-Chang Yang, Lan Cai, Shi-Zhu Wen

10:10 “Electrical Field Induced Effect in Nanocrystalline Gold Film during Deposition”

Chao-Guang Pu, You-Shen Lin

10:30 Coffee Break

10:45 “Nanometer Scale Interfacial Lubrication of PFPE Lubricants Z-DOL and AWA at Hard Disk Interface”

Wei Wang, Zhong-Wen Lan, Hong Ji, Hao-Cai Wang

11:05 “Preparation and Tribological Behavior of Perfluoropolyether Lubricant Film on ZrO₂ Thin Film”

Jin-Qing Wang, Sheng-Rong Yang, Miao Chen

11:25 “The Initial Sliding Microfriction Properties of Polysilicon Films”

Jian-Ning Ding, Ji-Chang Yang, Lan Cai

11:45 “Nano-frictional Behaviors on Etched Silicon (100) Surfaces”

Hai-Fei Bao, Yuelin Wang, Bin Xiong, Deren Lu, Weiyuan Wang, Tongyi Zhang

12:05 Lunch

Session 7: Bio-MEMS & Microfluidic Devices

Room: A

Session Chair & Co-Chair: Dan Luo & Gang Jin

13:30 “Some Challenges and Opportunities for Wet Microsystems” (Invited)

Prof. Zhao-Wu Tian, Xiamen Univ., China

14:00 “A Two-State Model for the Transport of Molecular Motors”

Tong-Jun Zhao, Jian-Hai Wu, Yong-Hong Wang, Yi-Zhong Zhuo

14:20 “Effective Potential and Efficiency for a Single Brownian Motor”

Yong Zhan, Tong-Jun Zhao, Hui Yu, Qing Ji, Hai-Long An, Yi-Zhong Zhuo

14:40 “Nanostructure of Nacre and Its Mechanical Effects”

Fan Song, Yilong Bai

15:00 “An experimental investigation of hollow fiber flow in Dialyzer”

Miao Li, Ji-Ming Yang, Xi-Yun Lu, Xie-Zhen Yin, Da-Yong Gao

15:20 Coffee Break

15:35 “Autonomous Multi-robot Sensor-Based Cooperation for Nanomedicine”

Adriano Cavalcanti, Robert A. Freitas Jr.

15:55 “Molecular Assembly of Dendrimer-like DNA Nanoparticles”

Yougen Li, Yolanda Tseng, Dan Luo

16:15 “A New Type of Micropump for Bio-medical Application”

Shuxiang Guo, Kinji Asaka

16:35 “Electrostatic MEMS Planar Fan for Enhancement of Fluid Mixing”

Zhi-Chun Ma, Xuyuan Chen, Yung-Cheng Lee

16:55 “Novel EHD-Pump Driven Micro Mixers”

Tzong-Shyng Leu, Fei-Chi Ma

Session 8: Micro & Nano Systems I

Room: B

Session Chair & Co-Chair: X.Y. Ye & J.B. Luo

13:30 “Design of a Novel Bulk Micro-machined RF MEMS Switch”

Hai-Xia Zhang, Yi-Long Hao, Zhi-Yong Xiao, Dong-Mei Luo, Nora Finch, James Marchetti, Dan Keating, Vatsa Narasimha

13:50 “Design and Analysis of a Micromachined Capacitive RF Shunt Switch with Composite Membrane”

Min Miao, Guo-Ying Wu, Yu-Feng Jin, Yi-Long Hao, Zhi-Yong Xiao

14:10 “Fabrication and Characterization of Nickel Titanium Shape memory Thin Films by RF Magnetron Sputtering for MEMS Applications”

F. F. Gong, Q. P. Sun

14:30 “Design and Modeling of a New Thermocouple Structure for Microwave Power Measurements”

- De-Yong Chen, Da-Fu Cui, Wen-Ming Zhe, Li Wang*
- 14:50 “Design of S-band TT&C Transponder for Pico-Satellites”
Yi-Bin Xu, Zhong-He Jin, Wei Guo, Yong-Wei Huang, Yue-Lin Wang
- 15:10 Coffee Break**
- 15:25 “Comparison Between the System Identification and the Neural Network Methods in Identifying a Model Helicopter’s Yaw Movement”
Da-Rong Chen, Hao-Sheng Chen, Jia-Dao Wang
- 15:45 “System Identification of a Model Helicopter’s Yaw Movement Based on an Operator’s Control”
Hao-Sheng Chen, Da-Rong Chen
- 16:05 “Micro-machined Conformal Silicon Molds for Wafer Bumping and Probing”
S. W. Ricky Lee, C. C. Lo, K. H. Law
- 16:25 “Optical Alignment Applied for Solving Axis-Misaligned Errors in Micro Electro-Mechanical Systems”
Rong Zhu, Zhao-ying Zhou
- 16:45 “Fabrication of an Electrothermally Actuated Electrostatic Microgripper”
Sang H. Lee, Kwang-Cheol Lee, Seung S. Lee, Hyeon-Seok Oh

Session 9: Micro & Nano Systems II

Room: C

Session Chair & Co-Chair: W.J. Li & Max Meng

- 13:30 “Fabrication and Property Analysis of MWNT Junctions Through Nanorobotic Manipulations” (Invited)**
Prof. Toshio Fukuda, Nagoya Univeristy, Japan
- 14:00 “Fabrication Nano-structure Surface of Si-based Materials and Their Properties”
Jin-Jun Lu, Tao Xu, Ping-Yu Zhang, Qun-Ji Xue, Ben D. Beake
- 14:20 “Effects Analysis on the Mechanical Properties of Nanocrystalline Materials”
Yue-Wu Liu, Rong Zhou, Shou-Qin Lü
- 14:40 “Depth Dependence of Nanohardness in a CuAlNi Single Crystal Shape Memory Alloy”
Cheng Liu, Qingping Sun, Yapu Zhao, Tongxi Yu
- 15:00 “Phase Transformations of Micromachined Polysilicon Films under Nanoindentations”
Jian-Ning Ding, Ji-Chang Yang, Lan Cai
- 15:20 Coffee Break**
- 15:35 Micromachining the Optical Fiber Curvature Sensors and Their Micromechanical Interaction with the Host Structure Material
Alexandar Djordjevich
- 15:55 “Theoretical Study on Effect of the Size of Silver Nanoparticles on the localized Surface Plasmon Resonance Spectrum of Silver Nanoparticles Embedded in BaO Thin Film”
Hai Yang, Rui-Qing Huang, Jian-Ming Hao, Cao-You Li, Wei He

- 16:15 “Study of Double-Base Thick Film Ceramic Material”
Meng-Kui Wang
- 16:35 “Preparation of VOP Ultra-fine Particles by Supercritical Fluid Drying”
Ling Zeng, Wei-Jie Ji, Yi Chen
- 16:55 “Morphology Correlation to the Superhydrophobicity in an Organic Thin Film on Rough Al”
Sili Ren, Shengrong Yang, Ya-Pu Zhao, Xudong Xiao, Tongxi Yu

17:30 Banquet

August 13, 2002 (Tuesday)

Session 10: Micro & Nano Systems I

Room: A

Session Chair & Co-Chair: Steve Tung & Yi-Kuen Lee

9:00 “Thermally Engineered Nanostructures for Energy Conversion” (Invited)

Prof. Gang Chen, MIT, USA

9:30 “Lyapunov Exponents of a Micro Chaotic Mixer”

Yi-Kuen Lee

9:50 “The Pumping Effect of Traveling Phase Transition in Microtubes”

Mo-Ran Wang, Zhi-Xin Li, Ze-Jing Chen

10:10 “Fiber Ring Laser Intra-cavity Absorption Spectroscopy for Gas Sensing”

M. Zhang, Y. Zhang, D. N. Wang, W. Jin, M. S. Demokan

10:30 Coffee Break

10:45 “Proceeding of Experiments about Liquid Flow through Microtubes”

Zhan-Hua Li, Hai-Hang Cui

11:05 “Discussion about the Similarity of Micro-scale Gas Flows”

Feng-Hua Qin, De-Jun Sun, Xie-Yuan Yin

11:25 “Design and Rapid Fabrication of a Microfluidic Fraction Collector”

Bo-Zhi Yang, George C. Lopez, Alan J. Rosenbloom, Qiao Lin

11:45 “A MEMS Flowmeter for Measuring Very Small Flow Rates”

Steve Tung, Jason Sheppard, Edward Chiu

12:05 “A Polymer-based Micro Thermal Actuator for Micromanipulations in Aqueous Environment”

Ho-Yin Chan, Wen J. Li

Session 11: Micro & Nano Systems II

Room: B

Session Chair & Co-Chair: U.M. Mescheder & Dae Won Kim

- 9:00 “Image Integration Method for the Dynamic Measurements of Micro Components”
Xiaoyuan He, Xin Kang, Fujun Yang, Xiaolin Han, Qingan Huang
- 9:20 “Measurement of Adhesive Force between Micro Surfaces with a Novel Micro Leverage Structure”
Miao Lu, Yan-Jun Zhao, Xiao-Dong Hu, Xue-Feng Zou, Zheng-Ping Zhao
- 9:40 “Investigation of Laser-assisted Bonding for MEMS Packaging”
Yi Tao, Ajay P. Malshe, W. D. Brown
- 10:00 “Flip Chip Technologies and Their Applications in MEMS Packaging”
Hai-Ying Wang, Yi-long Bai
- 10:20 Coffee Break**
- 10:35 “Fabrication and Experimental Results of Lateral Trench Electrode IGBT”
Ey Goo Kang, Dae Won Kim, Man Young Sung
- 10:55 “Micromachined Multilevel Silicon Structure by Anisotropic Wet Etching”
Chen-Kuei Chung, Chien-Chih Lee
- 11:15 “Annealing Effect on the Adhesion of Stacked Films for MEMS”
Chen-Kuei Chung, Jeng-Long Ou, Luh-Huew Wu, Tzong-Sheng Lee
- 11:35 “The Fabrication of Large Area Si_3N_4 Membrane Mounted with NiCr/Ni Thermocouples”
Jian-Gang Zhang, Shan-Hong Xia, Shao-Feng Chen
- 11:55 “Micromachining with Porous Silicon”
U.M. Mescheder, A. Kovacs, A. Fahad, R. Huster
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Session 12: Micro & Nano Systems III

Room: C

Session Chair & Co-Chair: S.J. Qin & Yao Cheng

- 9:00 “Orientation, Conformation and Positioning of Macromolecules at the Nanometer Scale” (Invited)**
Prof. Sven Oscarsson, Uppsala University, Sweden
- 9:30 “Intrinsic Vibration of Multiwalled Carbon Nanotubes”
C.Q. Ru
- 9:50 “Applications of Oriented Batch-CNT”
Yao Cheng, Shoushan Fan
- 10:10 “Dependence of AC Electrophoresis Carbon Nanotube Manipulation on Microelectrode Geometry”
Victor T.S. Wong, Wen J. Li
- 10:30 Coffee Break**

- 10:45 “Morphological Dynamic Simulation of Cluster of Atoms Deposition Process”
Jenn-Sen Lin, Shin-Pon Ju
- 11:05 “Linear Probe Arrays for Dip-Pen Nanolithography”
Xuefeng Wang
- 11:25 “Fabrication of Submicro Channels in Quartz Cubes Using Laser-induced Splitting”
S.J. Qin, Wen J. Li, Michael Y. Wang
- 11:45 “Preparation of Ultra-Fine Calcium Silicate Powders”
Gui-Yu Zeng
- 12:05 “The Infrared Absorption’s Phonon Model of the Nanometer Powder”
Ying-Tang Zhang, Guang-xi Zhou

12:25 Lunch

Session 13: Simulation, Characterization & Modeling

Room: A

Session Chair & Co-Chair: Ning Xi & H. Tritschler

- 14:00 “Image-Based Calibration for Micromanipulators”
Guang-Yong Li, Ning Xi
- 14:20 “Electrochemical Machining of 3-D Complex Patterns of Metals and Semiconductors”
Zhong-Qun Tian
- 14:40 “The Simulation on the Microelectromechanical Tunable F-P Optical Filter”
Hao Feng, Zhong-Liang Deng, Xian-Hai Luo
- 15:00 “Topology Optimization for Stable Non-linear Structures”
Zhen-Yu Liu, Dong-Ming Guo, Jan G. Korvink
- 15:20 “Improvement of Micro End Milling Tools through Variation of Tool Manufacturing Method and Geometry”
J. Schmidt, H. Tritschler

15:40 Coffee Break

- 15:55 “Molecular Dynamics and Quantum Mechanics Investigation on Mechanic-electric Behaviors of Nanotubes”
Wan-Lin Guo, Yu-Feng Guo, Li-Feng Wang
- 16:15 “Characterization and Modeling of a Curved Electrostatic Actuator”
Su-Yan Liu, Xiong-Ying Ye, Zhao-Ying Zhou
- 16:35 “Method for Reducing Reactive Ion Etching Lag in MEMS Process”
Chen-Kuei Chung, Hui-Chuan Lu
- 16:55 “Relative Importance of Natural Convection and Surface Radiation in a Square Enclosure”
Na Li, Zhi-Xin Li
- 17:15 “Simulation of Contact Interaction of Nanometer Objects Pushing Using AFM

Cantilever as Manipulator”

Xiao-Peng Yu, Andrew A. Goldenberg

17:35 “Characterization of Electronic Transients by an Ultrafast Scanning Tunneling Microscope”

Tian Lan, Guo-Qiang Ni

Session 14: Simulation, Characterization & Modeling

Room: B

Session Chair & Co-Chair: Xiaoyuan He & Jenn-Sen Lin

14:00 “M-Test Method for Measuring Mechanical Property of Multi-layer in MEMS”

Yan-Feng Jiang, Qing-An Huang

14:20 “Rotor Manipulation Mechanism for Micro Unmanned Helicopter”

Jun-Gang Lü, Jia-Dao Wang, Da-Rong Chen

14:40 “Micromechanical Characterization of TiN Films on 9Cr18 Steels”

Tai-Hua Zhang, Yong Huan, Xiu-Lan Wang

15:00 “Deformation Measurement of a Small Component and a Thin Film Using Time Sequence Speckle Pattern Interferometry”

Xi-De Li, Bing Deng, Gang Tao

15:20 “Evaluation of Mechanical Properties and Strain Criterion for Reliability Design of Micromachined Polysilicon Thin Films”

Jian-Ning Ding, Ji-Chang Yang, Lan Cai, Shi-Zhu Wen

15:40 Coffee Break

15:55 “Mechanical Model of Laterally Driven Polysilicon Microresonant”

Xiao-Yang Chen, Xue-Jin Shen

16:15 “Properties and Structure of High Coercivity Sm (Co, Al, Si) /Cr Sputtered Thin Films”

Xiang Wang, Da-Cheng Zhang, Zuo-Yi Li

16:35 “Reliability of Electrostatic MEMS: Charge Accumulation in Dielectric Layer”

Xu-Yuan Chen, Zhi-Chun Ma, Yung-Cheng Lee

16:55 “Electrical Properties of Multilayer-chip ZnO Varistors”

Xue-Ya Kang, Wei-Zhen Ba, Ming Zhang

17:15 “Electrical Properties of Boron and Phosphorus Doped Polycrystalline Silicon Germanium Films”

Liang Dong, Rui-Feng Yue, Wang Yan, Wen-Tao Huang, Li-Tian Liu

17:35 “Microstructure, Mechanical and Magnetic Properties of FeTiN Thin Films by IBAD”

Ji Zhang, Xin-Chun Lu, Guo-Shun Pan, Wen-Zhi Li, Jian-Bin Luo

Session 15: Simulation, Characterization & Modeling

Room: C

Session Chair & Co-Chair: C.Q. Ru & Tong-Xi Yu

14:00 “Study of Fracture Behavior of Piezoelectric Ceramics with Defects”

- Zhen-Ke Zhang, Dai-Ning Fang*
- 14:20 “Onset of Adiabatic Shear Instability in Strain Gradient Dependent Metal Matrix Composites”
L.-H. Dai, L. F. Liu, Y. L. Bai
- 14:40 “Crack Tip Fields with Strain Gradient Effects”
S.-H. Chen, T. C. Wang
- 15:00 “3D Simulation of the Micro Indentation Process and Relative Problems Research”
Min Li, Ling-Dong Wang, Nai-Gang Liang
- 15:20 “Size Effects in Micro-bending Deformation of MEMS Devices Based on the Discrete Dislocation Theory”
Shan Tang, Chen Zhu, Yue-Guang Wei
- 15:40 Coffee Break**
- 15:55 “Reflection of Magneto-thermoelastic Waves under Thermoelasticity without Energy Dissipation”
Ya-Qin Song, Yuan-Chong Zhang
- 16:15 “Simulation of Thin Metal Film Bonding for MEMS Applications Inside a Microwave Cavity”
Jason Clendenin, Steve Tung, Nasser Budraa, John Mai
- 16:35 “Atomic Stick-slip Friction between Commensurate Self-assembled Monolayers”
Tao Zhang, Hui Wang, Yuan-Zhong Hu
- 16:55 “Freezing Atom Method in Molecular Dynamics Simulation”
Wan-Lin Guo, Tian-Zhong Chang
- 17:15 “The Inner Pressure of the Atoms in a Solid in Refined TFD Theory”
Ru-Zeng Zhu, Yu-Hua Wen, Jin Qian
- 17:35 “Analysis of Residual Stress Gradient in MEMS Multi-layer Structure”
Jin Qian, Ya-Pu Zhao, Ru-Zeng Zhu, Tong-Xi Yu

Conference Concludes