

SYMPOSIUM NM10

Micro/Nano Assembling, Manufacturing and Manipulation for
Biomolecular and Cellular Applications
April 18 - April 21, 2017

Symposium Organizers

Xiaodong Chen, Nanyang Technological University
Donglei (Emma) Fan, University of Texas at Austin
Peer Fischer, Max Planck Institute for Intelligent Systems
Tony Huang, Duke University

Proceedings Statement

All authors are invited to submit articles based on their 2017 MRS Spring Meeting presentations to the journals in the MRS portfolio (www.mrs.org/publications-news). Papers submitted and accepted for publication in MRS Advances (www.mrs.org/mrs-advances) will be available as symposium collections. Visit the MRS/Cambridge University Press Publications Booth #100 in the Exhibit Hall to learn more, including MRS Advances print options available at special rates during the meeting week only.

* Invited Paper

SESSION NM10.1: Nanomanipulation and Nanomotors I
Session Chairs: Donglei (Emma) Fan and Peer Fischer
Tuesday Morning, April 18, 2017
PCC West, 100 Level, Room 102 AB

10:30 AM *NM10.1.01

3D Printed Skeletal Muscle-Powered Biological Machines [Rashid Bashir](#)^{1,2}; ¹University of Illinois at Urbana-Champaign, United States; ²Micro and Nanotechnology Laboratory, United States.

11:00 AM *NM10.1.02

Optofluidic Nanotweezer Methods for Characterizing Nanoparticles and Viruses [David Erickson](#); Cornell University, United States.

11:30 AM NM10.1.03

Highly Efficient Light-Driven Micro/Nanomotors [Wei Gao](#); University of California, Berkeley, United States.

11:45 AM NM10.1.04

Design and Characterization of Mechanical Traps for Single Cell Capture and Analysis [Qianru Jin](#); Johns Hopkins University, United States.

SESSION NM10.2: Nanomanipulation and Nanomotors II
Session Chairs: Donglei (Emma) Fan and Peer Fischer
Tuesday Afternoon, April 18, 2017
PCC West, 100 Level, Room 102 AB

1:30 PM *NM10.2.01

Emergent Biological Machines from Self-Assembled Tissues Undergoing Phase Transitions [Taher Saifi](#); University of Illinois at Urbana-Champaign, United States.

2:00 PM NM10.2.02

Biohybrid Bacteria-Driven Microswimmers with Polyelectrolyte Multilayer for Targeted Drug Delivery Applications [Byung-Wook Park](#); Max Planck Institute for Intelligent Systems, Germany.

2:15 PM *NM10.2.03

Tracking Particles In, On and Around Devices at the Nanoscale [Samuel M. Stavis](#); National Institute of Standards and Technology, United States.

2:45 PM BREAK

3:00 PM NM10.2.04

Emergence of Life-Like Properties from Dissipative Self-Assembly of Nanoparticles [Serim Ilday](#); Bilkent University, Turkey.

3:15 PM NM10.2.05

Assembling and Actuation of Biomaterial-Based Micromachines and Their Applications [Kwanoh Kim](#)^{1,2}; ¹The University of Texas at Austin, United States; ²Korea Institute of Machinery and Materials, Korea (the Republic of).

3:30 PM NM10.2.06

Swimming Strategies of Nanowire-Based Swimmers in Newtonian Fluids [Bumjin Jang](#); ETHZ, Switzerland.

3:45 PM *NM10.2.07

Enzyme Powered Nanobots as Active and Controllable Nanovehicles [Samuel Sanchez](#)^{2,1,3}; ¹Max-Planck-Institute for Intelligent Systems, Germany; ²Institute for Bioengineering of Catalonia, Spain; ³Catalan Institute for Research and Advanced Studies, Spain.

4:15 PM NM10.2.08

Double-Powered Nanobots with Magnetotactic Behavior [Philipp S. Schatting](#); Aarhus University, Denmark.

4:30 PM NM10.2.09

Structure Simplification and Motion Control of Micro/Nanomotors [Fangzhi Mou](#); Wuhan University of Technology, China.

4:45 PM NM10.2.10

Shape-Transformable Liquid Metal Nanoparticles [Yiliang Lin](#); North Carolina State University, United States.

SESSION NM10.3: Poster Session I: Nanoparticles—Motorization
Tuesday Afternoon, April 18, 2017
8:00 PM - 10:00 PM
Sheraton, Third Level, Phoenix Ballroom

NM10.3.01

Ultrasound Activated Film for Biomedical Imaging [Andrew C. Kummel](#); University of California, San Diego, United States.

NM10.3.02

Coordination-Induced Assembly of Intelligent Polysaccharide-Based Phototherapeutic Nanoparticles for Cancer Treatment [Ye Tian](#)^{1,2}; ¹Fudan University, China; ²State Key Laboratory of Molecular Engineering of Polymers, China.

NM10.3.03

Transient Micromotors that Disappear When No Longer Needed [Emil Karshaley](#); University of California, San Diego, United States.

NM10.3.04

Measuring the Viscoelastic and Adhesion Properties of Neurite by Forced Peeling [Ze Gong](#)^{1,2}; ¹University of Hong Kong, Hong Kong; ²University of Pennsylvania, United States.

NM10.3.05

Magnetically Actuated Microswimmer for pH Sensing and Cargo Delivery [Ming You](#); Wuhan University of Technology, China.

NM10.3.06

Self-Propelled Floating Foam Minimotor for Oil Removal [Xiaofeng Li](#); Wuhan University of Technology, China.

NM10.3.07

Micromanipulation and Selective Release of Inorganic Crystals via Actuation of Elastomeric Supports—Organization, Separation and Assembly of Nano/Microparticles [Mark A. Rose](#); University of Nebraska Lincoln, United States.

NM10.3.08

Light-Steered Micromotors [Chuanrui Chen](#)^{1,2}; ¹Wuhan University of Technology, China; ²University of California, San Diego, United States.

NM10.3.09

Acoustic Rotary Micromotors (ARMs) [Xiaolong Lu](#)^{1,2}; ¹University of California, San Diego, United States; ²Nanjing University of Aeronautics and Astronautics, China.

NM10.3.10

Ultrahigh Performance Electrically Driven Nanomotors—For Controllable Biomolecule Release, Purification and Microfluidic Manipulation [Jianhe Guo](#); University of Texas at Austin, United States.

NM10.3.11

Electric Field Guided Manipulation of Chemically Powered Nanomotors for Application in Cargo Delivery, Assembly and Power of Rotary NEMS [Jianhe Guo](#); University of Texas at Austin, United States.

NM10.3.12

Magnetically Reconfigurable Microbots Based on Assemblies of Anisotropic Colloidal Particles [Koohee Han](#)^{1,2}; ¹North Carolina State University, United States; ²Research Triangle Materials Research Science and Engineering Center, United States.

NM10.3.13

Acoustically Propelled Nanoshells—New Advances in Acoustically Propelled Nanomotors [Fernando Soto](#); University of California, San Diego, United States.

NM10.3.14

Biocide Activity of Microporous Titanosilicate ETS-10 Containing Volatile Organic Compound Thymol [Melda Isler Binay](#); Middle East Technical University, Turkey.

SESSION NM10.4/SM8.5: Joint Session: Functional Materials for Cellular and Biotechnological Applications

Session Chairs: Xiaodong Chen and Andreas Lendlein

Wednesday Morning, April 19, 2017

PCC West, 100 Level, Room 102 AB

8:30 AM NM10.4.01/SM8.5.01

Regulation of Mesenchymal Stem Cell Behavior and Secretion via Microscale Surface Roughness [Nan Ma](#); Institute of Biomaterial Science and Berlin-Brandenburg Center for Regenerative Therapies, Helmholtz-Zentrum Geesthacht, Germany.

8:45 AM NM10.4.02/SM8.5.02

Fabrication of Crosslinked Sphere Structure of Biodegradable Polymer Nanoparticles for Efficient Controlled Drug Release [Ravichandran Honnavally Kollarigowda](#); University of Alberta, Canada.

9:00 AM NM10.4.03/SM8.5.03

Maintenance of Neural Progenitor Cell Stemness in 3D Hydrogels Requires Matrix Remodeling [Christopher M. Madl](#); Stanford University, United States.

9:15 AM NM10.4.04/SM8.5.04

Selective Packaging of pDNA into Rod- or Toroid-Shape within Polyplex Micelles [Kensuke Osada](#); University of Tokyo, Japan.

9:30 AM *NM10.4.05/SM8.5.05

Metal-Organic Frameworks for Biotechnology [Paolo Falcaro](#); TuGraz, Austria.

10:00 AM BREAK**10:30 AM NM10.4.06/SM8.5.06**

Mimicking Matrix Vesicles to Enhance Biomineralization of Osteoblast Cells [Fabian Itel](#); Aarhus University, Denmark.

10:45 AM NM10.4.07/SM8.5.07

Micro-Fabricated Thermoresponsive Polymer-Grafted Surface for Producing Contractile Muscle Tissue Construct [Hironobu Takahashi](#); Tokyo Women's Medical University, Japan.

11:00 AM *NM10.4.08/SM8.5.08

Mechanobiology, Pluripotent Stem Cells and Early Embryonic Development [Jianping Fu](#); University of Michigan, Ann Arbor, United States.

11:30 AM NM10.4.09/SM8.5.09

Stabilization of Enzymes Using a Protein Matrix Identified from Squid Sucker Ring Teeth [Chelsea C. Riegel](#)^{1,2}; ¹Air Force Research Laboratory, United States; ²UES Inc, United States.

11:45 AM NM10.4.10/SM8.5.10

Systemic Administration of Enzyme-Responsive Nanocapsules for Promoting Bone Repair [Hongzhao Qi](#); Tianjin University, China.

SESSION NM10.5: Nanomanipulation and Nanomotors III

Session Chairs: Peer Fischer and Jianping Fu

Wednesday Afternoon, April 19, 2017

PCC West, 100 Level, Room 102 AB

1:30 PM *NM10.5.01

Dynamics of Self-Assembled Active Colloids [John G. Gibbs](#); Northern Arizona University, United States.

2:00 PM *NM10.5.02

Nanomachines that Write, Image, Repair, Sense, Isolate and Destroy [Joseph Wang](#); University of California, San Diego, United States.

2:30 PM BREAK**3:30 PM NM10.5.03**

Collective Dynamics of Magnetic Colloidal Rollers [Alexey Snezhko](#); Argonne National Laboratory, United States.

3:45 PM NM10.5.04

Microrobotic Lithography and Nanoscopy [Jinxing Li](#); University of California, San Diego, United States.

4:00 PM *NM10.5.05

Cellular Applications of Single Beam Acoustic Tweezer [K. K. Shung](#); University of Southern California, United States.

4:30 PM NM10.5.06

Particle Assembly Using Acoustic Holography [Kai Melde](#); Max Planck Institute for Intelligent Systems, Germany.

4:45 PM NM10.5.07

Electroformed Three-Dimensional Magnetic Microrobots [George Chatzipirpiridis](#); Institute of Robotics and Intelligent Systems, ETH Zurich, Switzerland.

SESSION NM10.6: Poster Session II: Polymer Nanostructure Materials

Wednesday Afternoon, April 19, 2017

8:00 PM - 10:00 PM

Sheraton, Third Level, Phoenix Ballroom

NM10.6.01

Remote Control of Light-Triggered Oncolytic Virotherapy [Zi-Xian Liao](#); Institute of Medical Science and Technology, Taiwan.

NM10.6.02

Protein-Based Bio-Lasers [Malav S. Desai](#)^{1,2,3}; ¹University of California, Berkeley, United States; ²University of California, San Francisco, United States; ³Lawrence Berkeley National Laboratory, United States.

NM10.6.03

Bio-Based Conducting Hydrogel Nanocomposite Doped with Carbon Nanotubes for Biomedical Application [Jean-Francois Guillet](#)^{1,2}; ¹Univ Toulouse 3-Paul Sabatier, France; ²CNRS, France.

NM10.6.04

Biocompatible D–A Semiconducting Polymer Nanoparticle with Light-Harvesting Antenna for Highly Effective Photoacoustic Imaging Guided Photothermal Therapy [Jinfeng Zhang](#); City University of Hong Kong, China.

NM10.6.05

Controlling the Amount and Position of Vesicle Fusion with a Bilayer Lipid Membrane Using an Electrostatic Interaction [Azusa Oshima](#); NTT Basic Research Laboratories, Japan.

NM10.6.06

Development of Functional Gelatin/Chitosan Films Incorporated with Silica Nanoparticles Formed by Biomimetic Silica Deposition [Mi-Ran Ki](#)^{1,2}; ¹Korea University, Korea (the Republic of); ²Korea University, Korea (the Republic of).

NM10.6.07

Fabrication of Monodisperse Linear Green Fluorescent Protein Oligomers with Defined Valency [Yu-na Kim](#); KAIST, Korea (the Republic of).

NM10.6.08

ATP Synthesis by Reconstitution of Membrane Proteins Bacteriorhodopsin and ATP-Synthase in Triblock Co-Polymer Vesicles [Satarupa Dhir](#); University of Alberta, Canada.

NM10.6.09

A Molecular Dynamics Study of Geometrical and Temperature Effects on Sintering Dynamics of Cu-Ag Core-Shell Two-Nanoparticle Model [Jiaqi Wang](#); The University of Tennessee, United States.

NM10.6.10

Silicon Substrate Patterns on Silane Functionalized Surfaces via Block Copolymer Lithography of Cylinder-Forming Polystyrene-Block-Poly(dimethylsiloxane) Self- and Directed-Assembly [Dipu Borah](#); Trinity College Dublin, Ireland.

NM10.6.11

Glucose Oxidase-Mimicking Magnetic Nanochains for Label-Free Colorimetric Biomedical Detection [Peng Wang](#)^{1,2}; ¹Nanyang Technological University, Singapore; ²Nanyang Technological University, Singapore.

SESSION NM10.7: Nanoparticles and Bioapplications I

Session Chair: Donglei (Emma) Fan
Thursday Morning, April 20, 2017
PCC West, 100 Level, Room 102 AB

8:00 AM *NM10.7.01

Nanomanufacturing Research at NSF [Khershed Cooper](#); National Science Foundation, United States.

8:30 AM *NM10.7.02

Assembly of Nanoparticles for Tumor Theranostic Applications [Mingyuan Gao](#); Chinese Academy of Sciences, China.

9:00 AM NM10.7.03

Scalable Materials Integration into Lipid Multilayer Microarrays for Cell-Based High-Throughput Screening [Steven Lenhart](#); Florida State University, United States.

9:15 AM NM10.7.04

Intracellular Delivery via Ultrahigh Throughput Mechanoporation for Cell Therapy Applications [Harish G. Dixit](#); University of California, Riverside, United States.

9:30 AM NM10.7.05

A Scalable Pulsed Plasma Process for Synthesis and Assembly of Functional Nanoparticles [Sadegh Askari](#); Linköping University, Sweden.

9:45 AM NM10.7.06

Immobilization of Functionalized Gold Nanoparticles on Electrode Surfaces Controlled by the Composition of the Electrolyte [Corinna Kaulen](#); RWTH Aachen University, Germany.

10:00 AM BREAK**10:30 AM *NM10.7.07**

Shape-Memory Effects—Soft Materials and Polymers in Small Scale [Andreas Lendlein](#)^{1,2}; ¹Helmholtz-Zentrum Geesthacht, Germany; ²University of Potsdam, Germany.

11:00 AM NM10.7.08

Bioimprinting Technology for the Removal of Blood Cancer Cells from Acute Myeloid Leukemia Patients [Vesselin Paunov](#); University of Hull, United Kingdom.

11:15 AM NM10.7.09

Virus-Templated Single-Walled Carbon Nanotubes for High-Resolution Real-Time Imaging in Ovarian Cancer [Neelkanth M. Bardhan](#); Massachusetts Institute of Technology, United States.

11:30 AM NM10.7.10

A Novel Multifunctional Nanodevice for Targeted Cancer Therapy [Marcus Hoop](#); ETH Zurich, Switzerland.

SESSION NM10.8: Nanoparticles and Bioapplications II

Session Chair: Xiaodong Chen
Thursday Afternoon, April 20, 2017
PCC West, 100 Level, Room 102 AB

1:30 PM *NM10.8.01

Discerning Rare Disease Biomarkers by Micro- and Nanotechnologies [Jeff Tza-Huei Wang](#); Johns Hopkins University, United States.

2:00 PM *NM10.8.02

Assembling Plasmonic Nanobiosensors for Biomolecular and Cellular Analysis [Katsuo Kurabayashi](#); University of Michigan, United States.

2:30 PM NM10.8.03

Artificial Nanostructures for Multifunctional Sensing Devices [Aswini Pradhan](#); Norfolk State University, United States.

2:45 PM NM10.8.04

Phage Nanofiber Based Structural Color Biosensor and Their Pattern Recognition Sensing Network System [Ju Hun Lee](#)^{1,2}; ¹University of California, Berkeley, United States; ²Lawrence Berkeley National Laboratory, United States.

3:00 PM BREAK**3:30 PM NM10.8.05**

Label-Free Chemical Sensing in Live Human Cells with Antenna-Coupled Plasmonic Nanowire Endoscope (ACPNE) [Ruoxue Yan](#); University of California, Riverside, United States.

3:45 PM NM10.8.06

Non-Destructive Nanostraw Intracellular Sampling for Longitudinal Cell Monitoring [Yuhong Cao](#); Stanford University, United States.

4:00 PM *NM10.8.07

3D Tracking of Individual Quantum Dot Labeled Growth Factor Receptors on Live Cells [James H. Werner](#); Los Alamos National Laboratory, United States.

4:30 PM NM10.8.08

Quantum Dot-Based Biolabels for Imaging and Sensing Applications [Tobias Jochum](#); CAN GmbH, Germany.

4:45 PM NM10.8.09

PH Sensitive Graphene Oxide “Nano-Flare” for Living Cell Imaging and Detection [Leilei Tian](#); South University of Science and Technology of China, China.

SESSION NM10.9: Poster Session III: Nanoparticles and Bioapplications

Thursday Afternoon, April 20, 2017
8:00 PM - 10:00 PM
Sheraton, Third Level, Phoenix Ballroom

NM10.9.01

Focused Electrospayed Nanodroplet Beam for Microfabrication [Elham Vakil Asadollahi](#); University of California, Irvine, United States.

- NM10.9.02**
Improvement Approach for Gas Barrier Behavior of Polymer/Clay Nanocomposite Films [Maedeh Dabbaghianamiri](#); Texas State University, United States.
- NM10.9.03**
Self-Assembly of Zwitterionic Sulfoobetaine Siloxane onto Silica Nanoparticles for Application as a Versatile Antifouling Coating System [Brianna R. Knowles](#)^{1,2,3}; ¹University of Wollongong, Australia; ²ARC Research Hub for Australian Steel Manufacturing, Australia; ³BlueScope, Australia.
- NM10.9.04**
A Nanodiamond Platform for Stimuli-Responsive Detection and Treatment of Metastatic Cancer [Edward K. Chow](#); National University of Singapore, Singapore.
- NM10.9.05**
Ag(AgCl)-Reinforced Cellulose Hybrids with Enhanced Antibacterial and Photocatalytic Activities—Synthesis, Characterization and Mechanism [Yanyan Dong](#)^{1,2}; ¹Beijing Forestry University, China; ²Uppsala University, Sweden.
- NM10.9.06**
Role of Surface Structure of Cubosomes and Its Application in Drug Delivery [Sonal B. Deshpande](#)^{1,2}; ¹Indian Institute of Technology-Delhi, India; ²All India Institute of Medical Sciences, India.
- NM10.9.07**
Self-Assembled Cellulose Nanofibers as Colorimetric Sensing Platform for Aldehyde- Gas Detection System Using Color Films by Self-Assembled Cellulose [Wonbin Song](#); Korea University, Korea (the Republic of).
- NM10.9.08**
Fluorescent Based Nanobiosensors for Detection of Methylated DNA for Early Cancer Diagnosis [Mehdi Dadmehr](#); Payame Noor University, Iran (the Islamic Republic of).
- NM10.9.09**
The High-Relaxivity of GO-Gd@C₈₂ Nanohybrids as Magnetic Resonance Imaging Contrast Agents [Juan Li](#); Institute of High Energy Physics, Chinese Academy of Science, China.
- NM10.9.10**
Kinetic Control of the Coverage of Oil Droplets by DNA-Functionalized Colloids [Darshana Joshi](#); University of Cambridge, United Kingdom.
- NM10.9.11**
Surface Engineering via Nonlinear Laser Lithography for Efficient Shaping, Splitting, Transport and Collection of Water at the Microscale [Serim Ilday](#); Bilkent University, Turkey.
- NM10.9.12**
Exploiting Universal Stochastic Growth Dynamics under Nonequilibrium Conditions for Directional Self-Assembly of Multiscale Complex Materials [Serim Ilday](#); Bilkent University, Turkey.
- NM10.9.13**
Nanoscale Patterning of Biopolymers for Functional Biosurfaces [Akshith Peer](#)^{1,2}; ¹Iowa State University, United States; ²Ames Laboratory, United States.
- NM10.9.14**
Block Copolymer-Templated Fabrication of Carbon Nanofiber Electrodes [Maziar Ghazinejad](#)^{1,2}; ¹California State University, Fresno, United States; ²University of California-Irvine, United States.
- NM10.9.15**
Bio-Screening of Protein Coated Iron-Oxide Nanoparticles—In Vitro and In Vivo by the C.elegans Model [Anna Roig](#); Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Spain.
- NM10.9.16**
One-step Synthesis Titanium Dioxide Porous Microspheres by Picosecond Pulsed Laser Welding [Huiwu Yu](#); Huazhong University of Science and Technology (HUST), China.
- NM10.9.17**
Synthesis and Functionalization of High Yield Graphene Quantum Dots for Advanced Biomedical Application [Muhammad Sajjad](#)^{1,2}; ¹Western Kentucky University, United States; ²Institute of Functional Nanomaterials, University of Puerto Rico, United States.
- NM10.9.18**
Fabrication and Characterization of Nanofluidic Devices for DNA Optical Mapping Using a FIB-SEM Instrument [Tobias Volkenandt](#); Carl Zeiss Microscopy GmbH, Germany.
- NM10.9.19**
Assembly, Characterization and Application of Enhanced Carrier for Hydrophobic Molecules in Aqueous Systems [Oleksandr Klep](#); Clemson University, United States.
- NM10.9.20**
Optimization of Titanium Deep Reactive Ion Etching at the Deep Submicron Scale for Improved Cellular Response [Bryan W. Woo](#); University of California, Riverside, United States.
- NM10.9.21**
Bio-Compatible Micro-Particles Programmed with Magnetic Anisotropy [Suyeon Jeong](#); Sungkyunkwan University, Korea (the Republic of).
- NM10.9.22**
Microfluidic Synthesis of Superparamagnetic Iron Oxide Nanoparticles [Weitian Zhao](#); École Polytechnique Fédérale de Lausanne, Switzerland.
- NM10.9.23**
Zum Ultrathin Silica Shells Doped with Iron (III) for Notable Ultrasound Performance and Biodegradability [Ching-Hsin Huang](#); University of California, San Diego, United States.
- NM10.9.24**
Visualization of Nanomaterials with the Assistance of Volatile Nanoparticles [Muqiang Jian](#); Tsinghua University, China.
- NM10.9.25**
Scalable and Facile Fabrication of Self-Cleaning Transparent Superhydrophobic Surfaces with Micro/Nano Structures [Young-Geun Ha](#); Kyonggi University, Korea (the Republic of).
- NM10.9.26**
Predicting and Understanding MRI Contrast through Magnetometry of Metal-Loaded Synthetic Melanin Nanoparticles [Yijun Xie](#)^{1,2}; ¹University of California, San Diego, United States; ²University of California, San Diego, United States.
- NM10.9.27**
AgCl/Au/Ag Composite Nanocubes—In-Panel Discontinuous Au Particles Incorporated in Continuous Ag Matrix for Catalytic Applications [Jangho Jo](#); Korea University, Korea (the Republic of).
- NM10.9.28**
Novel Exchange-Coupled Fe₃O₄/CoFe₂O₄ Core/Shell Nanoparticles for Hyperthermia-Based Therapy [Sarath Witanachchi](#); University of South Florida, United States.
- NM10.9.29**
Manufacturing Hybrid Surfaces of Superhydrophilic-Hydrophobic Patterned with ZnO Nanowire and ZnO Nanowire-Ag Nanoparticle Hierarchical Structures for Fog Harvesting [Na Kyong Kim](#); Chonnam National University, Korea (the Republic of).
- NM10.9.30**
Manufacturing Zeolite/PVDF Composite Nanofiber Stacked Film by Electrospinning Process for Surface Wettability Controlling [Dong Hee Kang](#); Chonnam National University, Korea (the Republic of).
- NM10.9.31**
Injection Molding of Micro-Porous Ti10Nb10Zr Alloy with Space Holder Technique for Bio-Applications [Ozkan Gulsoy](#); Marmara University, Turkey.

NM10.9.32

Template-Assisted and Scalable Fabrication of Hierarchical Self-Assembly of Nanoparticles for Quantitative Biomolecular Sensing [Eun-Ah You](#); Korea Research Institute of Standards and Science (KRISS), Korea (the Republic of).

NM10.9.33

Enhancement of Glucose and Liquefied Petroleum Gas Molecular Sensing Using Electrodeposited Nano-Cubic N-Type Cu₂O Thin Film Structures [J.K.D.S. Jayanetti](#); University of Colombo, Sri Lanka.

NM10.9.34

Progress towards the Fabrication of Hollow, Out-of-Plane, Titanium Microneedles for Transdermal Delivery of Optical Clearing Agents [Samantha R. Corber](#); University of California, Riverside, United States.

NM10.9.35

MRI Reporter Contrast Agents for Ultrasound Ablative Therapy [James Wang](#); University of California San Diego, United States.

NM10.9.36

Electrokinetically Controlled Mass Transfer into Individual Chlamydomonas Reinhardtii Cells [Xixi Zhang](#); University of Rochester, United States.

SESSION NM10.10: Poster Session IV: Nanostructures for Cell Biology
Thursday Afternoon, April 20, 2017
8:00 PM - 10:00 PM
Sheraton, Third Level, Phoenix Ballroom

NM10.10.01

In Vitro Models to Investigate and Harness the Synergistic Effect of Multiple Cues on Cell Fate [Francesca Cavallo](#); University of New Mexico, United States.

NM10.10.02

Response of Porcine Dental Pulp and 7F2 Mouse Osteoblast Cells to Surface Micropatterning and Cellular Debris [Marian S. Kennedy](#); Clemson University, United States.

NM10.10.03

Microfluidic Three-Dimensional (3D) Flow Focusing for Acoustics Based Cellular Cytometry [Vaskar Gnyawali](#)^{1,2,3}; ¹Ryerson University, Canada; ²Institute for Biomedical Engineering, Science and Technology (iBEST), Canada; ³Keenan Research Centre, St. Michael's Hospital, Canada.

SESSION NM10.11: Nanostructures for Cell Biology
Session Chair: Xiaodong Chen
Friday Morning, April 21, 2017
PCC West, 100 Level, Room 102 AB

8:30 AM *NM10.11.01

Photothermal Cutting of Mammalian Cell Membrane and Intracellular Delivery of Large-Sized Cargo [Pei Yu Chiou](#); University of California, Los Angeles, United States.

9:00 AM NM10.11.02

Development of Transparent Ultrathin Membranes Capable of Modulating Cell-Substrate and Cell-Cell Interactions [Marcela C. Mireles Ramirez](#); Rochester Institute of Technology, United States.

9:15 AM NM10.11.03

Mechanosensitive Cell Behavior on Electrorheological Substrates [Bianca Datta](#) and [Sunanda Sharma](#); Massachusetts Institute of Technology, United States.

9:30 AM NM10.11.04

Nanotopography-Dependent Mechanobiology Regulates Human Mesenchymal Stem Cell Fate [Weiqiang Chen](#); New York University, United States.

9:45 AM NM10.11.05

Targeted Cell Transfection and Necrosis Induced by Cytoskeleton Cortex Distortions under Single-Cell Oscillatory Manipulations by an Optical Trap [Xiaoxuan Sun](#); The University of Hong Kong, Hong Kong.

10:00 AM BREAK**10:30 AM *NM10.11.06**

Microfluidic Manipulation for Single Cancer Cell Analysis and Personalized Medicine [Chwee Teck Lim](#); National University of Singapore, Singapore.

11:00 AM *NM10.11.07

Microfluidic Trapping System for Cell Engineering and Phenotype Assay [Lidong Qin](#); Houston Methodist Research Institute, United States.

11:30 AM NM10.11.08

A DNA Encoding Strategy for Integrated Single Cell Proteomics and Transcriptomics [Alexander Xu](#); California Institute of Technology, United States.

11:45 AM NM10.11.09

Modulation of Biochemical Functions of Microtubules by Mechanical Deformation [Akira Kakugo](#); Hokkaido University, Japan.