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ASME Announces 2013 Outstanding Paper Awards at The Second Global Congress on NanoEngineering for Medicine and Biology

Breakthrough research from graduate student researchers — from tissue-engineered human gut to bio-inspired robots — garnered Outstanding Paper Awards at the ASME Second Global Congress on NanoEngineering for Medicine and Biology (NEMB 2013). These award-winning papers were selected from among all eligible conference submissions by a committee of the conference organizers.

The Congress, held February 4 through 6 in Boston, focused on collaboration in the use of nanoscale engineering, medicine, and the life sciences to improve health care. The attendees represented a wide range of experts and peers from around the world, with 100 of the attendees hailing from countries spread from Singapore to Denmark. Programming included sessions in eight technical tracks and keynote and plenary sessions led by leading scientists, engineers, and clinicians in nanotechnology disciplines.

The following were presented with the 2013 ASME Outstanding Paper Awards:

Track 1: Nanoengineering for Medical Diagnostics, Therapeutics and Imaging

Papers delivered in poster presentations:

Allen Chen, Rice, for the paper: Allen L. Chen, Adam Y. Lin, Robert J. Langsner, Joseph K. Young, Ying Hu, Sterling Noelck, Monica Barrera, and Rebekah A. Drezek, "Changes in Plasmonic Spectra of Metallic Nanoparticles Upon Cellular Interaction Through Time," Paper Number NEMB2013-93432, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Yan Fei Jiang, Washington University, for the paper: Yan Fei Jiang, Guy M. Genin, and Elliot L. Elson, "The remarkable clarity of blackness: measuring nanoscopic phase separation of membrane rafts below the optical resolution limit," Paper Number NEMB2013-93453, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Paper delivered in a podium presentation:

Fulden Buyukozturk, Northeastern, for the paper: Fulden Buyukozturk, "Mechanistic Modeling of Lipid Based Drug Delivery Systems for Enabling Oral Delivery of Hydrophobic Drugs," Paper Number NEMB2013-93425, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Track 2: Nano-/Microfluidics in Biology and Medicine: Analysis, Diagnostics and Therapeutics

Papers delivered in poster presentations

Kang-Ho Song, Colorado, for the paper: Kang-Ho Song, Shashank Sirsi, Tammy Trudeau, Arthur Gutierrez-Hartman, and Mark Borden, "Microbubble-assisted sonoporation for in vitro delivery of siRNA to breast cancer cells," Paper Number NEMB2013-93212, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Michelle Stolzoff, Boston University, for the paper: Michelle Stolzoff, Aaron Colby, Tyrone Porter, and Mark Grinstaff, "Lipid-Coated Expansile Nanoparticles for Altered Circulation, Targeting and Treatment of Cancer," Paper Number NEMB2013-93250, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Papers delivered in podium presentations:

Daniel Bechstein, Stanford, for the paper: Daniel Bechstein, Jung-Rok Lee, Dokyoon Kim, Richard S. Gaster, Junyi Wang, James A. Weaver, and Shan X. Wang, "Single chip microfluidically partitioned Giant Magnetoresistive Sensor Arrays enable sample multiplexing in biosensing," Paper Number NEMB2013-93031, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Todd Lagus, Vanderbilt, for the paper: Todd P. Lagus and Jon F. Edd, "Controlled co-encapsulation of multiple cell types in monodisperse microdroplets," Paper Number NEMB2013-93245, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Track 3: Nanoengineering for Regenerative Medicine and Tissue Engineering

Papers delivered in poster presentations:

Rupak Dua, Florida International, for the paper: Rupak Dua and Sharan Ramaswamy, "Enhancement of Interfacial Mechanical Properties of Tissue Engineered Cartilage To Bone Using Hydroxyapatite Nanoparticles," Paper Number NEMB2013-93205, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Altug Ozcelikkale, Purdue, for the paper: Altug Ozcelikkale, Yan Li, Xianfan Xu, and Bumsoo Han, "Effects of Freezing on Collagen Nanoscale Structure in Engineered Tissues," Paper Number NEMB2013-93125, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Eisabeth Schwab, Max Planck, for the paper: Eisabeth Schwab, Rebecca Medda, Theresa Pohl, and E. Ada Cavalcanti-Adam, "A quantitative investigation of bone morphogenetic protein 2 (BMP-2)- signal transduction on gold nanostructured surfaces," Paper Number NEMB2013-93366, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Paper delivered in a podium presentation:

Cara Buchanan, Virginia Tech., for the paper: Cara Buchanan, Elizabeth Voigt, Christopher Szot, Pavlos Vlachos, and Marissa Rylander, "Tissue-Engineered Tumor Microvessels to Study Shear Stress-Mediated Angiogenesis," Paper Number NEMB2013-93220, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Track 4: Manufacturing and Materials for Nanomedicine, Biology and Nanoengineering

Papers delivered in poster presentations:

Jonah Kaplan, Boston University, for the paper: Jonah Kaplan, Reimi Yonekura, Yolonda Colson, and Mark Grinstaff, "Three-Dimensional Superhydrophobic Biodegradable Electrospun Meshes for the Sustained Release of Hydrophilic Chemotherapy Agents," Paper Number NEMB2013-93330, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Xiaoning Wang, Boston University, for the paper: Xiaoning Wang, Congshun Wang, Stephan Anderson, and Xin Zhang, "Template-Assisted Fabrication of Hydrogel Nanoparticles for Use as Computed Tomography Contrast Agents," Paper Number NEMB2013-93293, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Papers delivered in podium presentations:

Colin Ng, Virginia Tech., for the paper: Colin Ng, Ji Wang, and Amrinder S. Nain, "Migratory 3D Single Cell Force Measurement on STEP Enabled Fibrous Nanonets," Paper Number NEMB2013-93104, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Lucas Ting, University of Washington, for the paper: Lucas Ting, Shirin Feghhi, and Nathan Sniadecki, "Platelet Activation And Contractility Under Shear Forces," Paper Number NEMB2013-93210, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Track 5: Multiscale Modeling and Experiment in Biology and Medicine

Papers delivered in poster presentations:

Negin Maftouni, Sharif University, for the paper: Negin Maftouni, Mehriar Amininasab, Mohammadreza Ejtehad, and Farshad Kowsari, "Multiscale Molecular Dynamics Simulation of Nanobio Membrane in Interaction with Protein," Paper Number NEMB2013-93054, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Zhao Qin, MIT, for the paper: Zhao Qin and Markus J. Buehler, "Ice crystal fracture enhanced by carbon dioxide," Paper Number NEMB2013-93388, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Huachuan Wang, George Washington University, for the paper: Huachuan Wang and Yongsheng Leng, "Molecular Simulations of Gold Nanojunctions in Alkanedithiol Solvent," Paper Number NEMB2013-93384, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Papers delivered in podium presentations:

Gavin Fullstone, University of Sheffield, for the paper: Gavin Fullstone, Abhishek Chaudhuri, Jonathan Wood, Mike Holcombe, and Giuseppe Battaglia, "Modeling the Transport of Nanoparticles across the Blood-Brain Barrier," Paper Number NEMB2013-93237, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Flavia Libonati, MIT, for the paper: Flavia Libonati, Arun K. Nair, Laura Vergani, and Markus J. Buehler, "Effects of oim-mutations on the mechanical behavior of collagen-hydroxyapatite nanocomposites," Paper Number NEMB2013-93310, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Track 6: Biological Nanomechanics: Materials Factors in Physiology, Disease and Treatment

Papers delivered in poster presentations:

Weiqiang Chen, Michigan, for the paper: Weiqiang Chen, Shinuo Weng, and Jianping Fu, "Nanotopographic Surface for Efficient Capture of Circulating Tumor Cells without Using Capture Antibodies," Paper Number NEMB2013-93187, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Jessie Jeon, MIT, for the paper: Jessie S Jeon, Ioannis Zervantonakis, Seok Chung, Joseph L Charest, and Roger Kamm, "In vitro extravasation model to study tumor cell transmigration across an endothelial monolayer," Paper Number NEMB2013-93398, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Puja Sharma, Virginia Tech., for the paper: Puja Sharma, Brian Koons, and Amrinder S. Nain, "Blebbing dynamics, single cell force measurements, and the influence of Cytochalasin D on glioblastoma multiforme cells using STEP fibers," Paper Number NEMB2013-93105, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Papers delivered in podium presentations:

Yue Shao, Michigan, for the paper: Yue Shao, Jennifer Mann, and Jianping Fu, "Spatiotemporally Coordinated Cellular Contractile Force Response under Uniaxial Substrate Stretch," Paper Number NEMB2013-93194, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Jack Staunton, Arizona State, for the paper: Jack R. Staunton, Bryant L. Doss, and Robert Ros, "Mechanical Properties of Breast Cancer Cells Embedded in Collagen I Matrices," Paper Number NEMB2013-93206, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Track 7: Natural, Biomimetic and Bioinspired Materials and Structures

Papers delivered in poster presentations:

Suman Bose, MIT, for the paper: Suman Bose, Rishi Singh, Mikhail Hollatz, Chia-Hua Lee, Jeffrey Karp, and Rohit Karnik, "Single-step ultrahigh enrichment of leukocytes from whole blood enabled by cell rolling on biomimetic adhesive surfaces," Paper Number NEMB2013-93346, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Alex Jiao, University of Washington, for the paper: Alex Jiao, Nicole E. Trosper, Bora Lee, Justin Lee, Sung Gap Im, and Deok-Ho Kim, "Nanoscale control over scaffold-free, anisotropic muscle tissue," Paper Number NEMB2013-93148, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Papers delivered in podium presentations:

Tristan Giesa, MIT, for the paper: Tristan Giesa, Nicola M. Pugno, and Markus J. Buehler, "Natural Stiffening and Nanoconfinement Increase Flaw Tolerance Length Scales of Biological Fibers: Case Study of Spider Silk," Paper Number NEMB2013-93359, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Maria Milagros Avila Olias, University of Sheffield, for the paper: Maria Milagros Avila Olias, Irene Canton, Nicholas J. Warren, P. Jeppe Madsen, Steve Armes, Elizabeth Smythe, and Giuseppe Battaglia, "Mimicking Biological Nanoparticles Cell entry Using PMPC Polymersomes," Paper Number NEMB2013-93087, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Track 8: Nanotechnology and Public Health

Papers delivered in poster presentations:

Jonathan Freedman, Boston University, for the paper: Jonathan Freedman, Hrvoje Lusic, Brian Snyder, and Mark Grinstaff, "Tantalum Oxide Nanoparticles for Evaluation of Cartilage Health Using Computed Tomography," Paper Number NEMB2013-93142, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Asanterabi Malima, Northeastern, for the paper: Asanterabi Malima, Jaydev Upponi, Sivasubramanian Somu, and Ahmed Busnaina, "Biosensor for early detection of cardiovascular disease biomarkers," Paper Number NEMB2013-93348, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.

Paper delivered in a podium presentation:

Zhongying Wang, Brown, for the paper: Jingyu Liu, Zhongying Wang, Frances Liu, Agnes B. Kane, and Robert Hurt, "Chemical Transformations of Nanosilver in Biological Environments," Paper Number NEMB2013-93272, *Proceedings of the 2013 ASME Second Global Congress on NanoEngineering for Medicine and Biology*.