



THE 1ST INTERNATIONAL
**CONFERENCE ON
NATURE INSPIRED
SURFACE ENGINEERING**
(NISE 2019)

June 11-14, 2019
Stevens Institute of Technology
New Jersey, USA

Conference Program Schedule

Dr. Chang-Hwan Choi
Conference Chair
Department of Mechanical Engineering
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Dr. Kenneth Park
Technical Committee Chair
Department of Mechanical Engineering
Northwestern University, IL, USA

Tuesday (June 11, 2019), Bissinger Room (4th floor) at the Wesley J. Howe Center

2:00-6:00 pm	Registration / Poster Setup
6:00-8:00 pm	Reception



Wednesday (June 12, 2019), Bissinger Room (4th floor) at the Wesley J. Howe Center

Time	Session/Chair	Abstract Title	Presenter
8:00-8:20 am	Registration		
8:20-8:30 am	Welcoming Remarks (Prof. Jean Zu, Dean of the Schaefer School of Engineering and Science)		
8:30-9:30 am	Keynote (I): Chang-Hwan CHOI	Keynote: Structured Surfaces – from Super-repellency to Drag Reduction	Chang-Jin "CJ" KIM, University of California, Los Angeles (UCLA), USA
9:30-9:50 am	Friction & Tribology: Tak Sing WANG	SLIPs with Reduced Skin-Friction Resistance	Federico VERONESI, Institute of Science and Technology for Ceramics, Italy
9:50-10:10 am		Tribological Properties of Nature-Inspired Microporous PDMS Surfaces under Physiological Conditions	Yiwen XI, Stevens Institute of Technology, USA
10:10-10:30 am	Coffee Break		
10:30-11:00 am	Phase Change (I): Edward BORMASHENKO	Invited: Bioinspired Jumping-Droplet Vapor Chambers	Chuan-Hua CHEN, Duke University, USA
11:00-11:20 am		Perfluoropolymer Nanoarrays Enabling Jumping Dropwise Condensation under Subcooling Larger than 70 K	Qianfeng Xu, College of Staten Island, USA
11:20-11:40 am		Bioinspired Textured Surfaces to Control Water Condensation: Experimental and Numerical Approaches	Stéphane VALETTE, University of Lyon, France
11:40-12:00 pm		Effect of Surface Wettability on Fog Collection on a Wire	Youhua JIANG, Northwestern University, USA
12:00-1:00 pm	Lunch		
1:00-2:00 pm	Poster Session (I)		
2:00-2:30 pm	Droplet (I): Zuankai WANG	Invited: Liquid Marbles, Naturally Inspired Elastic Nonstick Droplets: From Mini-reactors to Self-Propulsion	Edward BORMASHENKO, Ariel University, Israel
2:30-2:50 pm		Physics of Self-assembled Levitating Clusters of Water Droplets	Edward BORMASHENKO, Ariel University, Israel
2:50-3:10 pm		The Effect of Surface Curvature on Coalescence-Induced Jumping of Nanodroplets on Superhydrophobic Surfaces	Xukun HE, Virginia Tech, USA
3:10-3:30 pm		Deposition of Micrometric Water Droplets on Rough Hydrophobic Surfaces	Jeong-Hyun KIM, Brown University, USA
3:30-3:50 pm		Syntheses of Supraparticles on Liquid Repellent Surfaces	Sanghyuk WOOH, Chung-Ang University, South Korea
3:50-4:10 pm	Coffee Break		
4:10-4:40 pm	Droplet (II): Glen MCHALE	Invited: Bioinspired Wettability Gradient Surfaces: from Design to Control Droplet Transport	Yongmei ZHENG, Beihang University, China
4:40-5:10 pm		Invited: Nature-Inspired Topological Surfaces for Directional Droplet Transport	Zuankai WANG, City University of Hong Kong, China
5:10-5:30 pm		Printing Surface Charge as a New Paradigm to Program Droplet Transport	Xu DENG, University of Electronic Science and Technology of China, China
5:30-5:50 pm		Nature-inspired Omnidirectional Droplet Transportation using Magnetically Actuated Surface Deformation	Jaap DEN TOONDER, Eindhoven University of Technology, Netherlands
5:50-6:10 pm		Droplet Motion on Structured Surfaces	Yahua LIU, Dalian University of Technology, China

Thursday (June 13, 2019), Bissinger Room (4th floor) at the Wesley J. Howe Center

Time	Session/Chair	Abstract Title	Presenter
8:00-8:30 am	Registration		
8:30-9:30 am	Keynote (II): Kyo Chul PARK	Keynote: Transport-phenomena-based Approaches to Surface Engineering	Howard A. STONE, Princeton University, USA
9:30-9:50 am	Coating (I): Seok KIM	Cheap and Non-Fluorinated Superhydrophobic Concrete Coating	Jinlong SONG, Dalian University of Technology, China
9:50-10:10 am		Bioinspired Hedgehog Coating with Superomniphobicity	Jyotirmoy SARMA, University of Texas at Dallas, USA
10:10-10:30 am	Coffee Break		
10:30-11:00 am	Phase Change (II): Anne KIETZIG	Invited: Experimental Investigations on Bioinspired Hydro/Ice-phobic Coatings for Aircraft Icing Mitigation	Hui HU, Iowa State University, USA
11:00-11:20 am		Phase Adaptive Liquids for Exceptional Anti-icing and Anti-Frosting Performance	Rukmava CHATTERJEE, University of Illinois at Chicago, USA
11:20-11:40 am		Leidenfrost Rotors on Turbine-Like Surfaces	Glen McHALE, Northumbria University, UK
11:40-12:00 pm		Boiling Heat Transfer Enhancement using Micro-nano Hybrid Surfaces	Donghwi LEE, Yonsei University, Republic of Korea
12:00-1:00 pm	Lunch		
1:00-2:00 pm	Poster Session (II)		
2:00-2:30 pm	Adhesion: Hui HU	Invited: Responsive Surfaces for Reversible Adhesion and Tunable Wetting	Seok KIM, University of Illinois at Urbana-Champaign, USA
2:30-3:00 pm		Invited: Bioinspired Adhesive Architectures for Versatile Applications	Changhyun PANG, Sungkyunkwan University, Republic of Korea
3:00-3:20 pm		Nature- inspired Removal of Microparticles by Ciliated Surfaces	Shuaizhong ZHANG, Eindhoven University of Technology, Netherlands
3:20-3:40 pm		The Strong Attachment of Tree Frog's Toe Pads and Its Applications	Liwen ZHANG, Beihang University, China
3:40-4:00 pm		Biomimicking of Wrinkled Finger Phenomenon to Improve Fiber Matrix Adhesion in Fiber-reinforced Polymer Composites	Jayashree BIJWE, Indian Institute of Technology Delhi, India
4:00-4:20 pm	Coffee Break		
4:20-4:50 pm	SLIPS: Luyi SUN	Invited: Nature-inspired Materials for Health and Water Sustainability	Tak-Sing WONG, Pennsylvania State University, USA
4:50-5:20 pm		Invited: Controlling Droplets - Thin, Conformal and Gradient SLIP Surfaces	Glen McHALE, Northumbria University, UK
5:20-5:40 pm		Dynamic Contact Angle Measurements on Lubricant-Infused Surfaces	Jinkee LEE, Sungkyunkwan University, Republic of Korea
5:40-6:00 pm		Statics and Dynamics of Wetting on Lubricant-Infused Surfaces	Jiangtao CHENG, Virginia Tech, USA
6:00-8:00 pm	Social		

Friday (June 14, 2019), Bissinger Room (4th floor) at the Wesley J. Howe Center

Time	Session/Chair	Abstract Title	Presenter
8:00-8:30 am	Registration		
8:30-9:30 am	Keynote (III): Kyoo Chul PARK	Keynote: Butterfly Wing-Inspired Nanoparticle Coatings	Shu YANG, University of Pennsylvania, USA
9:30-9:50 am	Coating (II): Ling LI	Gallium Oxide Coated Surfaces for Liquid Metal Droplets Actuation	Ziyu CHEN, University of Texas at Dallas, USA
9:50-10:10 am		Carbon Nanotubes and Conjugated Polymer Films for Tunable Surfaces and Flexible Electrodes	Eui-Hyeok YANG, Stevens Institute of Technology, USA
10:10-10:30 am	Coffee Break		
10:30-11:00 am	Laser Machining: David WAUGH	Invited: Functionality through Texture - Nature-inspired Surface Engineering using Laser Micromachining	Anne-Marie KIETZIG, McGill University, Canada
11:00-11:30 am		Invited: Femtosecond Laser Tailoring of Surface Wettability for Droplet Control	Sajan D. GEORGE, Manipal Academy of Higher Education, India
11:30-11:50 am		Superhydrophobic and Anti-icing Microstructures on Aluminum utilizing Direct Laser Writing & Direct Laser Interference Patterning	Stephan MILLES, Technische Universität Dresden, Germany
11:50-12:10 pm		Nanofiber-coated Microstructures for Lab-on-chip Devices	Jana D. ABOU ZIKI, University of Ontario Institute of Technology, Canada
12:10-1:10 pm	Lunch		
1:10-1:40 pm	Optics & Photonics: Sajan GEORGE	Invited: Bio-Inspired Design of Mechanochromisms via Surface Engineering	Luyi SUN, University of Connecticut, USA
1:40-2:10 pm		Invited: Biological Surfaces with Simultaneous Mechanical and Optical Functions	Ling LI, Virginia Tech, USA
2:10-2:30 pm		StrC: A Research Tool to Connect Scientific Knowledge of Nature with Biomimetic Design Innovation	Carlos FIORENTINO, University of Alberta, Canada
2:30-2:50 pm		Broadband, Wide-angle, Anti-Reflection, Superhydrophobic Substrate	Prantik MAZUMDER, Barcelona Institute of Science and Technology, Spain
2:50-3:10 pm		Surface Engineering to form Vertical Organic Semiconductor Crystal Arrays	Stephanie S. LEE, Stevens Institute of Technology, USA
3:10-3:30 pm	Coffee Break		
3:30-4:00 pm	Device Application: Changhyun PANG	Invited: Bioinspired Adaptive Material Systems for Sensing, Sorting, and Harvesting	Ximin HE, University of California, Los Angeles (UCLA), USA
4:00-4:30 pm		Invited: Humidity-Responsive Soft Machines	Ho-Young KIM, Seoul National University, Republic of Korea
4:30-4:50 pm		High Q Factor Meridian Whispering Gallery Modes Sensing in an EWOD-tuned Water Droplet on Nanostructured Surfaces	Weifeng CHENG, Virginia Tech, USA
4:50-5:10 pm		Integrating Bioinspired Strain-Engineered MEMS Actuators with Breathable Fabric Carriers	Mohammad S. ISLAM, University of Louisville, USA
5:10-5:30 pm		Applications of Surface Engineering in Blood Plasma Separation	Benjamin INGIS, New Jersey Institute of Technology, USA
5:30-6:00 pm	Award & Closing Ceremony		

List of Poster Presentations (Poster Presentations: 1-2 pm on Wednesday and Thursday)

#	Abstract Title	Presenter
1	On the Design of Lignin Derived Nanoparticles by Benign Solution Assisted Processes	Surojit GUPTA, University of North Dakota, USA
2	New Investigations of Marangoni-Flow-Driven Self-Propulsion	Edward BORMASHENKO, Ariel University, Israel
3	Magnetic Displacement of Floating Diamagnetic Bodies:The Moses Effect Drives Diamagnetic Bodies	Edward BORMASHENKO, Ariel University, Israel
4	Block Copolymer-templated Hollow n-ZnO/p-Si Nanodiode Arrays using Atomic Layer Deposition	Woojae Lee, Pusan National University, Republic of Korea
5	Novel Lipid-Hydrogel-Nanostructure Hybrids for Antifouling Applications	Hyun-Ha PARK, Ulsan National Institute of Science and Technology (UNIST), Republic of Korea
6	Wetting Simulation by Lattice Boltzmann Method on Bio-inspired Surfaces	Vincent NEYRAND, University of Lyon, France
7	Water harvesting with different wettability	Hyuneui LIM, Korea Institute of Machinery and Materials, Republic of Korea
8	Absorption of Water in Nanoporous Anodic Aluminum Oxide	Hyunbin JO, Pukyong National University, Republic of Korea
9	Controlled Micro-texturing of Glass with Spark Assisted Chemical Engraving	Jana D. ABOU ZIKI, University of Ontario Institute of Technology, Canada
10	Visualization Study of Interfacial Behavior and Shapes underneath a Nucleated Bubbles on the Heated Surfaces w/ and w/o Micro-pillars via Synchrotron X-ray Imaging	Dong In YU, Pukyong National University, Republic of Korea
11	Biocompatible Transfer Printing Technique with Wet-responsive Film	Hoon YI, Ulsan National Institute of Science and Technology (UNIST), Republic of Korea
12	Actively Controllable Drop Bouncing Behavior and Robust Anti-icing Property of a Magnetic-responsive Hair Array	Sang-Hyeon LEE, Ulsan National Institute of Science and Technology (UNIST), Republic of Korea
13	Bioinspired Hairy Surfaces	Stefan MÜLLERS, IMTEK, Albert-Ludwigs University Freiburg, Germany
14	Elaboration of Model Bio-inspired Surfaces for Robust Super-hydrophobicity	Quentin LEGRAND, University of Lyon, France
15	Facile One-step Fabrication of Superhydrophobic Nanoporous Anodic Alumina using a Non-fluorinated Approach	Khoobaram CHOUDHARI, Manipal Academy of Higher Education, India
16	The Effect of Patterning and Surface Contact on the Sliding Speed over Ice	Ilze KALNINA, Riga Technical University, Latvia
17	Durable Anti-Corrosion Performance of Oil-Impregnated Porous Oxide Layer for Magnesium Alloy	Jaehoon JOO, Pukyong National University, Republic of Korea
18	Water-Repellent Multifunctional Edible Oil-Impregnated Surface of Stainless Steel	Minju KANG, Pukyong National University, Republic of Korea
19	Abrasive Wear Resistance of Mole Pelt Inspired Material	Maksim ANTONOV, Tallinn University of Technology, Estonia
20	The Impact Characteristics of Millimetric Water Droplets on Woven Stainless-Steel Meshes	Michael J. WOOD, McGill University, Canada

21	Effect of Laser Fabricated Micro-structures on the Wetting of Pure Aluminium	Stephan MILLES, Technische Universität Dresden, Germany
22	Scalable Fabrication of Functional Metallic Surfaces with Hierarchical Surface Morphology	Mario GUAGLIANO, Politecnico di Milano, Italy
23	Light Induced Degradation of Transport Length of $\text{CH}_3\text{NH}_3\text{PbI}_3$ Studied by Surface Photovoltage Spectroscopy after Goodman	Celline A. OMONDI, asinde Muliro University of Science and Technology, Kenya
24	A Highly Drainable, Capillary-enhanced, Organ-attachable Adhesive with Octopus-inspired 3-dimensional Architectures	Sangyul BAIK, Sungkyunkwan University, Republic of Korea
25	Amphibian-like Hierarchical Microchannels Embedded HydrGel for Drainable Adhesion with Peel Resistance	Da Wan KIM, Sungkyunkwan University, Republic of Korea
26	Rediscovery of Pitch for Ideal Coating Source of Si-based Anode Materials in Lithium Ion Batteries	Min Sung KO, Pukyong National University, Republic of Korea
27	Enhancing Condensation Through Bio-inspired Hybrid Surface Coated with MOF	Xuan CHEN, City University of Hong Kong, China
28	Efficient Removal of Droplet Inspired by Moss Plants	Yaqi CHENG, Dalian University of Technology, China
29	Spatial Control of Condensation on Cavity Surface	Jing SUN, City University of Hong Kong, China
30	Directional Droplet Transport at High Temperature	Minjie LIU, City University of Hong Kong, China
31	Transitions from Amorphous Structures Offer a More Efficient Pathway for Creating Crystalline Allotropes	Karlis Agris GROSS, Riga Technical University, Latvia
32	Integration of Nanopores onto Micro Wick Structures for High Performance Flat Heat Pipe	Deyin ZHENG, Nankai University, China
33	Bioinspired Laser-induced Periodic Surface Structures (LIPSS) on Stainless Steel and β -Ti Alloy for the Generation of Superhydrophobic and Superhydrophilic Surfaces	David Garreth WAUGH, Coventry University, UK
34	Corrosion Resistance of Superhydrophobic Aluminum 5052 Alloy Surface using Anodizing with Pore-widening Time	Chanyoung JEONG, Dong-eui University, Republic of Korea

*Poster size and layout: A0 (841 mm x 1189 mm or 33.1 inch x 46.8 inch), Portrait layout