



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

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

Dr. Chang-Hwan Choi
Conference Chair
Department of Mechanical Engineering
Stevens Institute of Technology, NJ, USA

Dr. Kenneth Park
Technical Committee Chair
Department of Mechanical Engineering
Northwestern University, IL, USA

Tentative Conference Program Schedule

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	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)	Keynote: Structured Surfaces – from Super-repellency to Drag Reduction	Chang-Jin "CJ" KIM
9:30-9:50 am	Friction & Tribology	SLIPs with Reduced Skin-Friction Resistance	Federico VERONESI
9:50-10:10 am		Tribological Properties of Nature-Inspired Microporous PDMS Surfaces under Physiological Conditions	Yiwen XI
10:10-10:30 am	Coffee Break		
10:30-11:00 am	Phase Change (I)	Invited: Bioinspired Jumping-Droplet Vapor Chambers	Chuan-Hua CHEN
11:00-11:20 am		Perfluoropolymer Nanoarrays Enabling Jumping Dropwise Condensation under Subcooling Larger than 70 K	Qianfeng Xu
11:20-11:40 am		Bioinspired Textured Surfaces to Control Water Condensation: Experimental and Numerical Approaches	Stéphane VALETTE
11:40-12:00 pm		Effect of Surface Wettability on Fog Collection on a Wire	Youhua JIANG
12:00-1:00 pm	Lunch		
1:00-2:00 pm	Poster session (I)		
2:00-2:30 pm	Droplet (I)	Invited: Liquid Marbles, Naturally Inspired Elastic Nonstick Droplets: From Mini-reactors to Self-Propulsion	Edward BORMASHENKO
2:30-2:50 pm		Physics of Self-assembled Levitating Clusters of Water Droplets	Edward BORMASHENKO
2:50-3:10 pm		The Effect of Surface Curvature on Coalescence-Induced Jumping of Nanodroplets on Superhydrophobic Surfaces	Xukun HE
3:10-3:30 pm		Deposition of Micrometric Water Droplets on Rough Hydrophobic Surfaces	Jeong-Hyun KIM
3:30-3:50 pm		Syntheses of Supraparticles on Liquid Repellent Surfaces	Sanghyuk WOOH
3:50-4:10 pm	Coffee Break		
4:10-4:40 pm	Droplet (II)	Invited: Bioinspired Wettability Gradient Surfaces: from Design to Control Droplet Transport	Yongmei ZHENG
4:40-5:10 pm		Invited: Nature-Inspired Topological Surfaces for Directional Droplet Transport	Zuankai WANG
5:10-5:30 pm		Printing Surface Charge as a New Paradigm to Program Droplet Transport	Xu DENG
5:30-5:50 pm		Nature-inspired Omnidirectional Droplet Transportation using Magnetically Actuated Surface Deformation	Jaap DEN TOONDER
5:50-6:10 pm		Droplet Motion on Structured Surfaces	Yahua LIU

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

Time	Session	Abstract Title	Presenter
8:00-8:30 am	Registration		
8:30-9:30 am	Keynote (II)	Keynote: Transport-phenomena-based Approaches to Surface Engineering	Howard A. STONE
9:30-9:50 am	Coating (I)	Cheap and Non-Fluorinated Superhydrophobic Concrete Coating	Jinlong SONG
9:50-10:10 am		Bioinspired Hedgehog Coating with Superomniphobicity	Jyotirmoy SARMA
10:10-10:30 am	Coffee Break		
10:30-11:00 am	Phase Change (II)	Invited: Experimental Investigations on Bioinspired Hydro/Ice-phobic Coatings for Aircraft Icing Mitigation	Hui HU
11:00-11:20 am		Phase Adaptive Liquids for Exceptional Anti-icing and Anti-Frosting Performance	Rukmava CHATTERJEE
11:20-11:40 am		Leidenfrost Rotors on Turbine-Like Surfaces	Glen McHALE
11:40-12:00 pm		Boiling Heat Transfer Enhancement using Micro-nano Hybrid Surfaces	Donghwi LEE
12:00-1:00 pm	Lunch		
1:00-2:00 pm	Poster session (II)		
2:00-2:30 pm	Adhesion	Invited: Responsive Surfaces for Reversible Adhesion and Tunable Wetting	Seok KIM
2:30-3:00 pm		Invited: Bioinspired Adhesive Architectures for Versatile Applications	Changhyun PANG
3:00-3:20 pm		Nature- inspired Removal of Microparticles by Ciliated Surfaces	Shuaizhong ZHANG
3:20-3:40 pm		The Strong Attachment of Tree Frog's Toe Pads and Its Applications	Liwen ZHANG
3:40-4:00 pm		Biomimicking of Wrinkled Finger Phenomenon to Improve Fiber Matrix Adhesion in Fiber-reinforced Polymer Composites	Umesh MARATHE
4:00-4:20 pm	Coffee Break		
4:20-4:50 pm	SLIPS	Invited: Nature-inspired Materials for Health and Water Sustainability	Tak-Sing WONG
4:50-5:20 pm		Invited: Controlling Droplets - Thin, Conformal and Gradient SLIP Surfaces	Glen McHALE
5:20-5:40 pm		Dynamic Contact Angle Measurements on Lubricant-Infused Surfaces	Jinkee LEE
5:40-6:00 pm		Statics and Dynamics of Wetting on Lubricant-Infused Surfaces	Jiangtao CHENG
6:00-8:00 pm	Social		

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

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

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

Abstract Title	Presenter
On the Design of Lignin Derived Nanoparticles by Benign Solution Assisted Processes	Surojit GUPTA
New Investigations of Marangoni-Flow-Driven Self-Propulsion	Edward BORMASHENKO
Magnetic Displacement of Floating Diamagnetic Bodies:The Moses Effect Drives Diamagnetic Bodies	Edward BORMASHENKO
Block Copolymer-templated Hollow n-ZnO/p-Si Nanodiode Arrays using Atomic Layer Deposition	Woojae Lee
Novel Lipid-Hydrogel-Nanostructure Hybrids for Antifouling Applications	Hyun-Ha PARK
Wetting Simulation by Lattice Boltzmann Method on Bio-inspired Surfaces	Vincent NEYRAND
Water harvesting with different wettability	Hyuneui LIM
Absorption of Water in Nanoporous Anodic Aluminum Oxide	Hyunbin JO
Controlled Micro-texturing of Glass with Spark Assisted Chemical Engraving	Jana D. ABOU ZIKI
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
Biocompatible Transfer Printing Technique with Wet-responsive Film	Hoon YI
Actively Controllable Drop Bouncing Behavior and Robust Anti-icing Property of a Magnetic-responsive Hair Array	Sang-Hyeon LEE
Bioinspired Hairy Surfaces	Stefan MÜLLERS
Elaboration of Model Bio-inspired Surfaces for Robust Super-hydrophobicity	Quentin LEGRAND
Facile One-step Fabrication of Superhydrophobic Nanoporous Anodic Alumina using a Non-fluorinated Approach	Khoobaram CHOUDHARI
The Effect of Patterning and Surface Contact on the Sliding Speed over Ice	Ilze KALNINA
Durable Anti-Corrosion Performance of Oil-Impregnated Porous Oxide Layer for Magnesium Alloy	Jaehoon JOO
Water-Repellent Multifunctional Edible Oil-Impregnated Surface of Stainless Steel	Minju KANG
Abrasive Wear Resistance of Mole Pelt Inspired Material	Maksim ANTONOV
The Impact Characteristics of Millimetric Water Droplets on Woven Stainless-Steel Meshes	Michael J. WOOD
Effect of Laser Fabricated Micro-structures on the Wetting of Pure Aluminium	Stephan MILLES
Scalable Fabrication of Functional Metallic Surfaces with Hierarchical Surface Morphology	Mario GUAGLIANO
Biomimicking of Fruit Seeds and Pulp Adhesion for Developing Zylon Based Polyetherimide Composites	Meghashree PADHAN

Amphibian-like Hierarchical Microchannels Embedded HydrGel for Drainable Adhesion with Peel Resistance	Da Wan KIM
Rediscovery of pitch for ideal coating source of Si-based anode materials in Lithium ion batteries	Min Sung KO
Enhancing Condensation Through Bio-inspired Hybrid Surface Coated with MOF	Xuan CHEN
Efficient Removal of Droplet Inspired by Moss Plants	Yaqi CHENG
Spatial Control of Condensation on Cavity Surface	Jing SUN
Directional Droplet Transport at High Temperature	Minjie LIU
Transitions from Amorphous Structures Offer a More Efficient Pathway for Creating Crystalline Allotropes	Karlis Agris GROSS
Microfluidic Flow Control based on Bioinspired Anisotropic Wetting Surfaces	Shuli WANG
Robust and Superhydrophobic Surface: Applications in Self-cleaning and Oil-water Separation	Baiyi CHEN
A Highly Drainable, Capillary-enhanced, Organ-attachable Adhesive with Octopus-inspired 3-dimensional Architectures	Sangyul BAIK
Integration of Nanopores onto Micro Wick Structures for High Performance Flat Heat Pipe	Deyin Zheng
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
Corrosion Resistance of Superhydrophobic Aluminum 5052 Alloy Surface using Anodizing with Pore-widening Time	Chanyoung JEONG

*Poster size: A0 (841 mm x 1189 mm or 33.1 inch x 46.8 inch)