

# PROGRAM

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## **February 12<sup>th</sup> (Wed)**

12:00-18:00

Registration      Conference Hall, Hokkaido University, 1F Entrance

**Room A**

Opening Remarks

12:50 - 13:00

**Yasuhiro Horiike**

(Japan Science and Technology Agency,  
Core Research for Evolutional Science and Technology)

**Chair: Masatsugu Shimomura**

13:00 - 14:00      Plenary Lecture 1

**Toyoki Kunitake**

(Kitakyusyu Foundation for the Advancement of Industry, Science and Technology)  
“Biomimetic Recognition and Patterning of Molecules on Water Surface”

**Chair: Tateo Shimozawa**

14:00 - 15:00      Honor Lecture

**Francis Pruche**

(Economic developpement City of Senlis (France), CEEBIOS (Europeen Center for Biomimicry))  
“The challenge of the Biomimetic and Biomimicry for future: creation of platforms of  
Research and Innovation opened ?”

**Chair: Wan Doo Kim**

15:00 - 16:00      Plenary Lecture 2

**Sang Joon Lee**

(Pohang University of Science and Technology (POSTECH))  
“Diagnosis of Various Biofluid Flow Phenomena and Biomimic Research”

**Room S**

16:00 – 18:00      Poster & Welcome Reception,  
Conference Hall, Hokkaido University, Room S, 1F

## **February 13th (Thu)**

**Room A**

**Chair: Daisuke Ishii**

09:00 - 09:45 Plenary S-1

**Naoe Hosoda** (National Institute for Materials Science (NIMS))

“Development of Biomimetic Underwater Adhesion Learning from a Beetle”

09:45 - 10:10 Invited Talk 1

**Seok (Sid) Chung** (Korea University)

“3D *ex vivo* Cancer Metastasis”

10:10 - 10:35 Invited Talk 2

**Ken-ichi Kimura** (Hokkaido University of Education)

“Formation of footpad during the pupal development in a fruit fly, *Drosophila melanogaster*”

10:35 - 10:45 **Coffee Break**

**Chair: Myoung-Woon Moon**

10:45 - 11:10 Invited Talk 3

**Hyungsun Kim** (Inha University)

“Exploring Eco-Material Technology in Bio-Inspired Lightweight Nano Composite”

11:10 - 11:25 Oral Presentation 1

**Chihiro Urata** (National Institute of Advanced Industrial Science and Technology)

“Nonperfluorinated Liquid-Repellent Coating Using Biophilic Compounds”

11:25 - 11:50 Invited Talk 4

**Ki Tae Nam** (Seoul National University)

“Revisiting Whitlockite, One of the Major Inorganic Components in Bone Tissue: Nanocrystal Synthesis and Evaluation as a Cell Scaffold”

11:50 - 12:05 Oral-2

**Yasuyuki Nogata** (Central Research Institute of Electric Power Industry)

“Problems of Marine Fouling and Its Prevention Studies with Environmental Friendly New Technology”

12:05 - 13:15 **Lunch**

Chair: Joonwon Kim

13:15 - 14:00 PlenaryS-2

**Daniel Beysens** (Ecole Sup. de Physique et Chimie Industrielle Paris-Tech, Commissariat à l'Energie Atomique et Energies Alternatives Paris & Grenoble (France))

“Boundary effects in dew formation”

14:00 - 14:25 Invited Talk 5

**Satoru Kidoaki** (Kyushu University)

“Mechanobio-Materials Manipulating Cell Motility and Functions”

14:25 - 14:50 Invited Talk 6

**Seung-Yop Lee** (Sogang University)

“Biomimetic Color-Changing Humidity Sensor Mimicking Isabella Longhorn Beetles”

14:50 - 15:15 Invited Talk 7

**Naoki Mori** (Kyoto University)

“Mimicking Larval Feeding Damage by Using Insect-Produced Elicitors”

15:15 - 15:25 **Coffee Break**

Chair: Yuji Hirai

15:25 - 15:50 Invited Talk 8

**Hyung-Soon Park** (Korea Advanced Institute of Science and Technology)

“Biomimetic Exotendon Device for Functional Hand Rehabilitation of Patient Post Stroke”

15:50 - 16:15 Invited Talk 9

**Takuya Ohzono** (National Institute of Advanced Industrial Science and Technology)

“Shape-Tunable Microwrinkles for Liquid Manipulation and Optical Diffuser”

16:15 - 16:40 Invited Talk 10

~~**Kwang-Joon Yoon** (Konkuk University)~~

~~“Design and Fabrication of Bio-mimetic Actuator with Single Crystal Piezoelectric Composite Material”~~

(Change) **Haeshin Lee** (Korea Advanced Institute of Science and Technology)

“Interfacial Material Formation inspired by Insect Tanned Cuticle”

16:40 - 17:05 Invited Talk 11

**Hiroto Tanaka** (Chiba University)

“Fabrication of Wrinkled Parylene Films for Wing Membranes of Small Aerial Robots”

17:05 - 17:30 Invited Talk 12

**Yasuharu Takaku** (Hamamatsu University School of Medicine)

“A Successful Surface Shield “Nano-suit” to Protect Living Organisms in a FE-SEM”

18:00 - 20:00

**Banquet**

Sapporo ASPEN Hotel (North 8 West 4, 5-banchi, Kita-ku, Sapporo)

**February 14<sup>th</sup> (Fri)**

**Room A**

**Chair: Satoru Kidoaki**

09:00 - 09:45

Plenary S-3

**Miki Haseyama** (Hokkaido University)

“Biomimetics Data Retrieval Platform for Enhancing Serendipity”

09:45 - 10:10

Invited Talk 13

~~Ilkwon Oh~~ (Korea Advanced Institute of Science and Technology (KAIST))

~~“Recent Progress on Graphene-based Artificial Muscles”~~

(Change)

**So Nagashima** (Korea Institute of Science and Technology)

“Nature-inspired folding arrays on a soft polymer for switchable nano channels”

10:10 - 10:35

Invited Talk 14

**Masahiro Ôhara** (The Hokkaido University Museum)

“Accumulation of SEM Images and Biomimetics Outreach Activities at the Hokkaido University Museum”

10:35 - 10:45

**Coffee Break**

**Chair: Seung-Yop Lee**

10:45 - 11:10

Invited Talk 15

**Joonwon Kim** (Pohang University of Science and Technology (POSTECH))

“Micro/Nano-engineered Surfaces for Wettability Control (Fabrications & Applications)”

11:10 - 11:25

Oral Presentation 3

**Keiichi Matsuura** (National Museum of Nature and Science)

“Bridging Natural History Museums and Biomimetics Project”

11:25 - 11:50

Invited Talk 16

**Si-Hyung Lim** (Kookmin University)

“Superamphiphobic/superamphiphilic Aluminium Surface Fabrication”

11:50 - 12:05 Oral Presentation 4

**Yuko Suto** (Tohoku University) .....

“Development of Matching Process against Lifestyle and Technology

-Specification of Lifestyle-”

12:05 - 13:15 **Lunch**

**Chair: Ki Tae Nam**

13:15 - 14:00 Plenary S-4

**Kenny Breuer** (Brown University)

“Elasticity and Fluid Motion: Flight, Propulsion and Energy-Harvesting inspired by Animal Motion”

14:00 - 14:25 Invited Talk 17

**Hiroshi Fudouzi** (National Institute for Materials Science)

“Surface shape deformation of soft opal films by hot embossing process based on a biomimetic approach”

14:25 - 14:50 Invited Talk 18

**Yeong-Eun Yoo** (Korea Institute of Machinery and Materials)

“Fabrication of Functionalized Nanopore Platform for Water Selective Transportation”

14:50 - 15:15 Invited Talk 19

**Kaori Kamata** (Tokyo Institute of Technology)

“Biomanipulating Process for 3D Structured Materials”

15:15 - 15:25 **Coffee Break**

**Chair: Yasutaka Matsuo**

15:25 - 15:50 Invited Talk 20

**Takuma Takanashi** (Forestry and Forest Products Research Institute)

“Vibration Signals in Insects and their Application to Pest Control”

15:50 - 16:15 Invited Talk 21

**Hidetoshi Kobayashi** (Osaka University)

“Closing Manner of Leaflet in Humble Plant (*Mimosa Pudica*)”

16:15 - 16:40 Invited Talk 22

**Simon Song** (Hanyang University)

“Development of Microfluidic Polydiacetylene Sensor Chip”

16:40 - 17:05 Invited Talk 23

**Syuji Fujii** (Osaka Institute of Technology)

“Soft dispersed systems stabilized with polymer particles: Foams and liquid marbles”

17:05 - 17:30 Invited Talk 24

**Donghyun You** (Pohang University of Science and Technology (POSTECH))

“Computational Design of Fluid-Structure Interaction with Biological Inspiration for Energy/Propulsion Applications”

17:30 - 17:55 Invited Talk 25

**Shigeru Deguchi** (Japan Agency for Marine-Earth Science and Technology)

“Elucidating Functional Diversity of Deep-Sea Extremophiles”

Closing Remarks

17:55 - 18:05

**Wan Doo Kim**

(Korea Institute of Machinery & Materials (KIMM))

**February 15<sup>th</sup> (Sat)**

Labo and Museum tours and Discussions at Hokkaido University

## Poster presentations

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1. Wetting Properties of Water Droplet on a Hydrophobic Pillared Surface  
(*Hyojeong Kim, Su-In Lee, and Joonkyung Jang*)
2. "Solvophilic" Polymer Brush Surfaces with Excellent Dewetting and Antifouling Properties  
(*Gary Dunderdale, Chihiro Urata, Benjamin Mashedor, Daniel Miranda, and Atsushi Hozumi*)
3. Raptor: Fast running biped robot inspired by cats  
(*Jongwon Park, Jinyi Lee, Jinwoo Lee, Kyung-Soo Kim, and Soohyun Kim*)
4. Performance of an Oil-Separator Adopting Bio-mimetic Surface  
(*Joon Ahn, Seongil Jang and Si-Hyung Lim*)
5. Compliant robotic legs with reflex mechanism for dynamic stabilization  
(*Jinyi Lee, Jongwon Park, Jinwoo Lee, and Soohyun Kim*)
6. Nature-inspired anti-reflective and superhydrophobic surfaces with hierarchical structures of Al oxide nanoflakes on Si nanopillars  
(*Jeongsim Lee, Eusun Yu, Tae-Jun Ko, Seong Jin Kim, Heon Ju Lee, Kwang-Ryeol Lee, Kyu Hwan Oh, and Myoung-Woon Moon*)
7. *Withdraw*
8. On-Chip Encapsulation of Photonic materials with Color Control  
(*Imsung Yoo and Simon Song*)
9. A Microfluidic Method for Size Control and Mass Production of a Biochemical Conjugated Polymer Sensor  
(*Sunghoon Baek and Simon Song*)
10. *Withdraw*
11. Constructing in-vitro 3D nasal mucosa on a PDMS-microchip  
(*Kyu Hwan Na and Seok Chung*)
12. Insect Classification from SEM Images Using Inventory Data  
(*Akihiro Takahashi, Takahiro Ogawa, and Miki Haseyama*)
13. Generation of collagen microbeads and cell coating  
(*Jaehoon Kim, Junghyo Yoon, Hyo Eun Jeong, and Seok Chung*)

14. Microstructured Carbon Nanotube Elastic Conductors for Electronic Skins  
(*JongHwa Park, YoungOh Lee, MinJeong Ha, SeungYoung Park, and Hyunhyub Ko*)
15. Bio-inspired smart nano-adhesive pads  
(*Hochan Lee, Doo-Seung Um, Seongdong Lim, and Hyunhyub Ko*)
16. Biomimetic Analysis on Liquid-feeding Phenomena of Butterflies  
(*Seung Chul Lee, Bo Heum Kim, and Sang Joon Lee*)
17. Enhancement of Water Condensation with Tiny Holes  
(*Kyungjun Song, Gyeonghee Kim, Sunjong Oh, Wan-Doo Kim, and Hyuneui Lim*)
18. AI-infiltrated Spider Dragline Silk and its Molecular Deformation Behaviors  
(*Seung-Mo Lee, Eckhard Pippel, Oussama Moutanabbir, Jae-Hyun Kim, Hak-Joo Lee, and Mato Knez*)
19. A Biological Classification Method Using SEM Images Based on Decision Tree Constructed From Taxonomy  
(*Jun Piao, Takahiro Ogawa, and Miki Haseyama*)
20. *Withdraw*
21. Gel-like Capillaries for Long-Distance Water Transport  
(*Kohei Sugaya and Daisuke Ishii*)
22. Fabrication and Optimization of Spontaneous Water Transport Systems Driven by Microstructures  
(*Shuto Ito and Daisuke Ishii*)
23. Photo-Responsive Carbon Nanohorns Embedded in Plasma Polymerized Nanofilms “Nanosuits” of Tween20  
(*Hideto Shibagaki, Ryohei Kawamura, and Daisuke Ishii*)
24. Wettability of Plasma Polymerized Membrane of Amphiphilic Small Molecules  
(*Ryohei Kawamura, Daisuke Ishii, Hiroshi Suzuki, Yasuharu Takaku, Isao Ohta, Yoshinori Muranaka, Takahiko Hariyama, and Masatsugu Shimomura*)
25. Preparation and Characterization of Nonwovens for Fuel/Water Separation Filter using Kapok Fiber  
(*Jung Yeon Kim and Yeong Og Choi*)
26. Earthworm-Like Miniaturized Modular Robot with Multi-Directional Motions  
(*Chang-Woo Song, Dong-Jun Lee, Bu Hyun Shin, and Seung-Yop Lee*)
27. 2-DoF Electromagnetic Oscillatory Actuator for Biomimetic Micro Mobile Robots



*(Bu Hyun Shin, Chang-Woo Song, and Seung-Yop Lee)*

28. Moth Eye Mimicking Nanostructures Towards Broadband Antireflection  
*(Hyuneui Lim, Seungmuk Ji, Kyungjun Song, Nam-Soo Kim, and Wandoo Kim)*
29. Biomimetic Application of Autorotating Maple Samaras  
*(Eui Jae Lee and Sang Joon Lee)*
30. Mussel-Inspired Catecholamine Surface Displayed Adhesive *Escherichia coli*  
*(Joseph P. Park, Min-Jung Choi, Seung-Hwan Lee, and Haeshin Lee)*
31. Roughness Effect on Drying Transition between Hydrophobic Surfaces  
*(Jihye Jang, Hyojeong Kim, and Joonkyung Jang)*
32. Wettability Control of Stainless Steel Mesh by Electrochemical Etching  
*(Chan Lee, Hyungmo Kim, and Joonwon)*
33. Nanocrystal Synthesis and Biocompatibility Evaluation of Whitlockite  
( $\text{Ca}_{18}\text{Mg}_2(\text{HPO}_4)_2(\text{PO}_4)_{12}$ ), the Second Most Abundant Biomineral in Bone  
*(Hae Lin Jang, Kyoungsuk Jin, Jaehun Lee and Younghye Kim, Ki Tae Nam)*
34. Flexible normal and shear stress sensors using a polymer based carbon nano tube composite material  
*(Duck-Gyu Lee, Youngdo Jung and Hyuneui Lim)*
35. Dynamic friction on submillimeter-sized wrinkles  
*(Kosuke Suzuki, Yuji Hirai and Takuya Ohzono)*
36. Structural color of a butterfly - How does multidomain photonic crystal structure produce an uniform color?  
*(Shinya Yoshioka)*
37. Fabrications of the hierarchical polymer structures inspired by a shark skin surface  
*(Aki Sato, Yuji Hirai, Takya Ohzono, Mitsuyoshi Matsunaga, Masatsugu Shimomura)*
38. Avian data in a biomimetic database and an example exploitation study of the database.  
*(Gen Morimoto, Takeshi Yamasaki, Keisuke Ueda, Hajime Matsubara)*
39. Fiber Embedded Drug Delivery Approach for Flexible Neural Probes  
*(Jaehwan Byun, Hyunryul Ryu and Noo Li Jeon)*
40. *Withdraw*
41. A nature-inspired cell culture platform for studying cell & patterned PDMS surface interaction  
*(Hyeonjun Hong, Sung Jea Park, Moon-Hee Na, Dong Sung Kim)*

42. Friction efficiency of fingerprint pattern compared to different micropatterns in various surface conditions

*(Taewan Kim, Dong Sung Kim)*