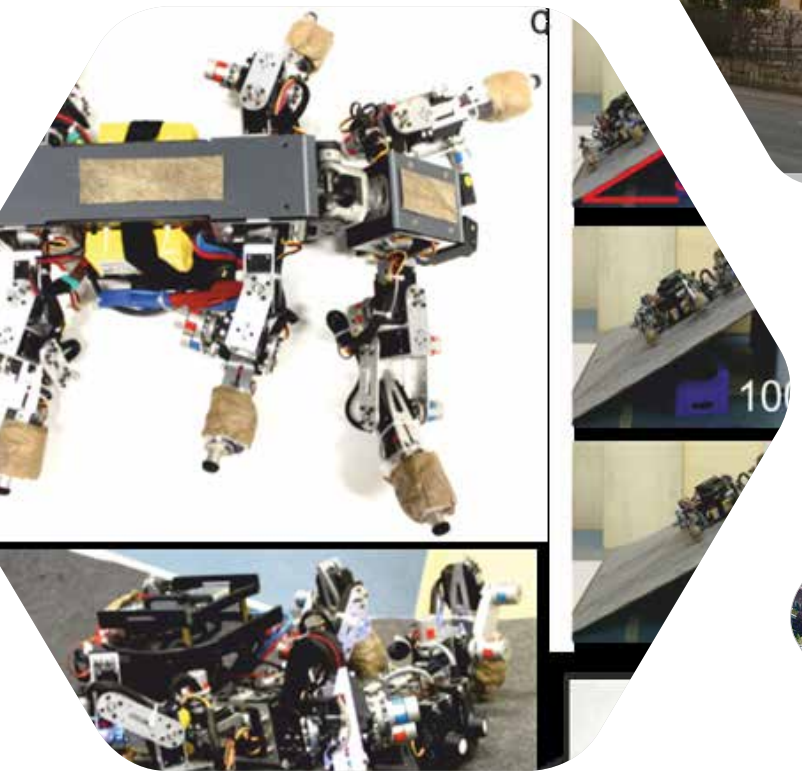
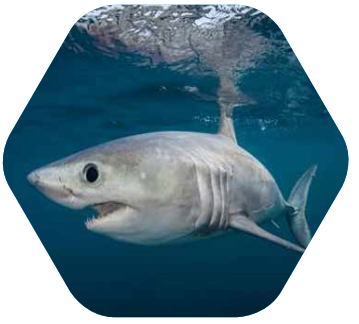
Newsletter

International Society of Bionic Engineering

Volume 6, Issue 1, 2017





Contents

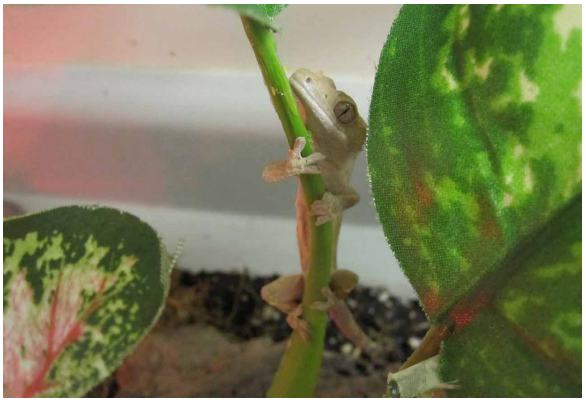
Carlo MENON

Simon Fraser University, Canada

* Canada Research Chair, Tier 1 (Biomedical Technology)
* CIHR and MSFHR Scholar Awards recipient
* Professor, Schools of Mechatronic Systems Engineering and Engineering Science, Simon Fraser University

Dr. Menon's career began in technology development where his discoveries and new knowledge generated led to the design of novel bionic technologies such as his work to fabricate dry adhesives or footpad terminators that mimic the hairs on a gecko's feet. His work has more recently branched out into the development of wearable biomedical devices to aid amputees or those with impairments from diseases such as stroke or other neurological diseases. In the prosthetics industry, there is an 80% rejection rate of robotic upper-extremity prosthesis. The big challenge is that, in order to effectively use the device, the user must overcome a steep learning curve, since conventional control strategies are based on the sequential muscle contractions detected by surface electromyography (sEMG) signals. In addition, the sEMG signal itself is not always reliable since its quality can fluctuate due to skin conditions such as sweating. In order to address these limitations, Dr. Menon's laboratory has applied the use of force-myography (FMG) to the development of a robotic hand (see Figure) that allows the amputee to move the hand in a potentially reliable, dexterous and intuitive manner.

The robotic hand uses a Muscle Activity Sensor Strip (MASS),which detects FMG signals from the amputee's arm and processes them to estimate hand postures which allows the amputee to intuitively control the robotic device. Use of the FMG technology could potentially allow a more effortless and dependable control of bionic prostheses that mimics natural use of the hand and ultimately enhance the quality of life of individuals with upper-extremity amputations.



Zuankai WANG

City University of Hong Kong, China

I came into the area of bionic engineering by shear chance. I was trained with a Bachelor degree in mechanical engineering and a Master degree in microelectronics. When groping for a glimpse of new finding after being stuck in my research projects (biomaterials and gas sensor) in the first two years of my Ph.D. study in US, one day I put a water droplet on the surface of a carbon nanotube (CNT) and observed that the water beaded up like a ball. After applying a small voltage up to 2V, the droplet wetted the CNT gradually. It was this simple electrically-induced wetting switching experiment that guided me to know and understand the lotus leaf effect, and enabled me to successfully finish my Ph.D. study in 2008. However, I was not fully fascinated by the vigor of bionics until 2011 after working on the HIV diagnosis as a postdoc in Columbia University and on the microfluidics in the first two years of my assistant professorship.

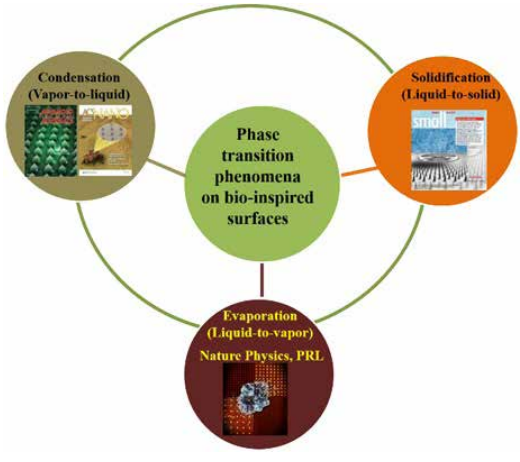


Figure 1: Phase transition phenomena on bio-inspired surfaces.

Very luckily, over the past several years, my lab has made important contributions to the cutting edge of bionic engineering, in particular in the fundamental understanding of the liquid-solid interaction on natural and artificial surfaces as well as applying the learned understanding to develop bio-inspired interfacial materials for multifunctional applications. For example, in the fundamental understanding of the phase transition processes (Figure 1), we revealed the unexpected contact line effect on the droplet wetting transition during the evaporation condition (Physical Review Letters, 2012), elucidated the universal roughness length scale (Soft Matter, 2012) as well as the surface adhesion (Physical Review Fluidics, 2016) for the Wenzel to Cassie transition during the condensation condition, and proposed new insights for the suppression of the inter-droplet freezing wave propagation during the icing condition (Scientific Reports, 2013).

We also used the bio-inspired approach to develop robust artificial surfaces to emulate the nature's remarkable functionalities (Figure 2). We innovated macrotexture-based strategy to break the physical contact time limit (Nature Physics, 2014; Nature Communications, 2015).

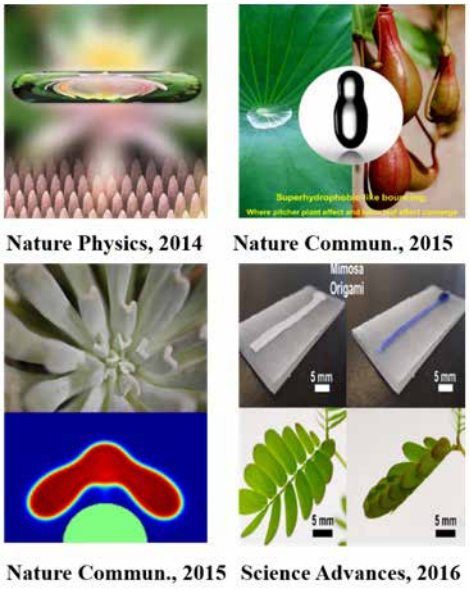
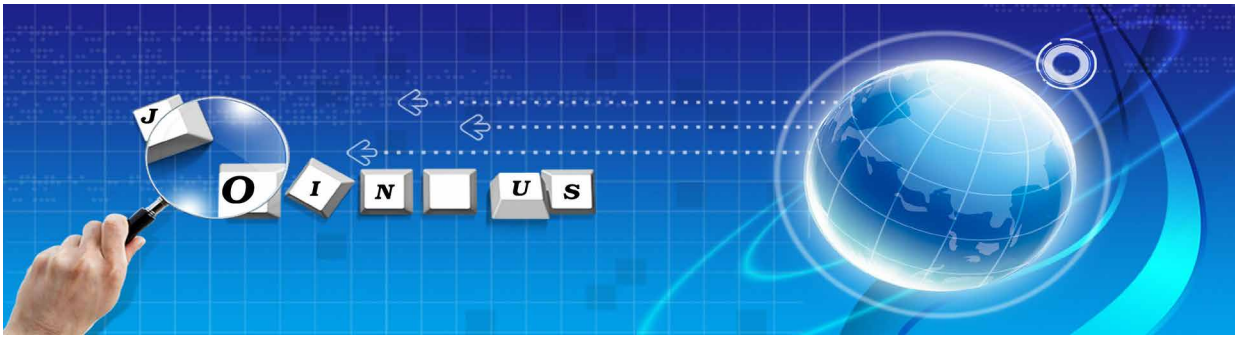


Figure 2: Rational design of bio-inspired surfaces.

These findings change the traditional view of droplet hydrodynamics established a long time ago. We also developed directional surfaces by controlling surface topography and chemistry, ranging from low temperature in which where the continuous vapour to liquid phase change process (Advanced Functional Materials, 2011; ACS Nano, 2015), the ambient temperature in which the driving force results from the surface energy gradient (Science Advances, 2016), to high temperature in which the driving force comes from the asymmetric vapour ejection associated with liquid to vapour phase transition (Nature Physics, 2016). These exciting innovations will find lots of applications in power generation, electronic cooling and biochemical systems.

In retrospect of the dark time during my Ph.D. study and early career, I feel destined and fortunate to foray into this exciting and dynamic area. I am also grateful to my team members and collaborators for their hard work and inspiration, which made our research rewarding. Our life is like the droplet on the lotus leaf. The droplet is soft, yet elastic; The droplet can be deformed, but it always comes to its original shape; The droplet can be transformed into other phases, but it generates useful power at the same time; The droplet can only shine a few minutes under the sun, but its impact on our life and society is eternal and far-reaching.



The ISBE was established in 2010 to foster the exchange of information in bionic engineering research, development and application. There are currently 1070 members from 55 countries and regions of the world. By becoming a member of the ISBE you can communicate with more academic elites and enjoy a variety of benefits. Membership of the Society is free of charge. It is our hope that we can establish and develop the ISBE together. We welcome your application for membership, online at: http://www. isbe-online.org/

Welcome to Join ISBE !

International Symposium on Bionic Science and Technology for One Belt and One Road

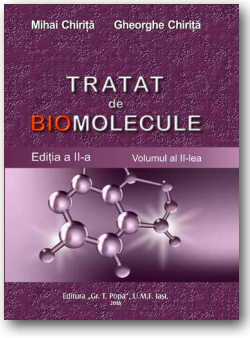
On November 2nd-4th, 2016, "International Symposium on Bionic Science and Technology for One Belt and One Road "was hold in Nanjing, China. The Symposium organized by the Ministry of Industry and information technology (MIIT), and undertook by the Institute of Bio-inspired Structure and Surface Engineering (IBSS) of Nanjing Aeronautics and Astronautics University (NUAA). The commissioner for international cooperation Jin Quanyuan, aerospace Vice President Chen Jinbao, the IBSS's director Dai Zhendong of NUAA attended the Symposium and delivered a speech.

Over 30 representatives from Singapore, Brunei, Laos, the Philippines, Thailand, and Viet Nam and other ASEAN countries participated in the course. All of them are expert in the field of bio-science and technology or the officers of national science and technology departments.

The Symposium will help to create a long-term and mutually beneficial international cooperation network in the field of Bionic research and technology transfer. By developing the

strengths of all parties, we can construct bionics research coordination relationships in Asia. One belt one road area ranges from tropical rain forest to Gobi desert, and nations along it have rich plant and animal resources. Cross-region cooperation can give full play to their advantages, which do well for the formation of mutually beneficial cooperation. This cooperation will further promote mutual understanding, understanding and collaboration, laying the Foundation for further personnel exchanges and training to promote industrial development associated related to bionics.

New Book: TRATAT de BIOMOLECULE



Authors:
Mihai Chirita
Gheorghe Chirita

ISBN:
978-606-544-390-7

Introduction

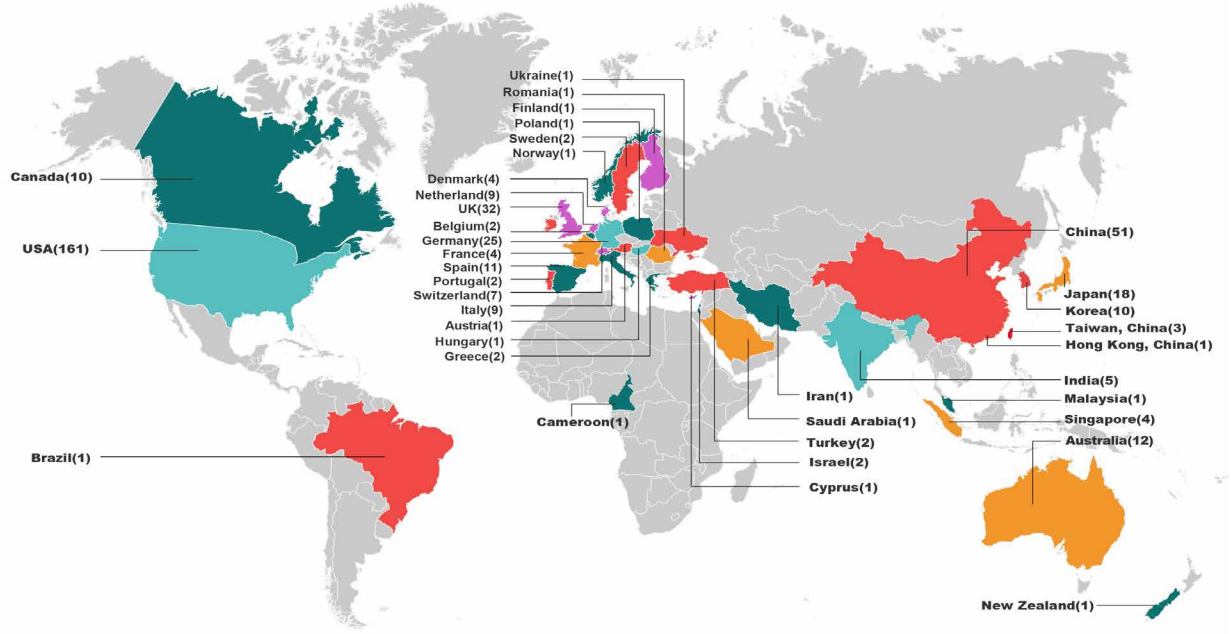
The first edition of this treaty was in two volumes.

Treaty on biomolecules Edition-II, in four volumes, is a work with specific interdisciplinary intended to mark a new stage of knowledge and scientific-technical progress in biomedical areas, involving concepts of biomimetic, science biomaterials, studies on interactions at the interfaces biomaterial/implant procedures for obtaining and processing of biopolymers, various medical applications.

Dr. Poramate Manoonpong received the 1000 Talents Plan project

Dr. Poramate Manoonpong is an Associate Professor of embodied AI & robotics at the Maersk McKinney Moller Institute at the University of Southern Denmark. His central research agenda is “to understand how brain-like mechanisms including biomechanics (embodiment) can be realized in artificial agents (like biologically-inspired robots) so they can become more like living creatures in their level of performance". As author or coauthor, he has published over 100 publications in major scientific journals such as Nature Physics (IF=18.79), IEEE Trans. Cybern. (IF=4.94) PLoSComput. Biol. (IF=4.58). One of his major contributions was a novel approach that exploits the interaction between a passive anisotropic scale-like material (e.g., shark skin) and rough surfaces to enhance locomotion efficiency of a robot walking on inclines and has been reported by Scientific Reports-Nature Journal (Manoonpong et al. Scientific Reports, 2016). He has recently received the 1000 Talents Plan project under the Recruitment Program for Young Professionals. The project, which will be performed at Institute of Bio-inspired Structure and Surface Engineering at Nanjing University of Aeronautics and Astronautics, aims to develop neurorobotic technology for advanced robot motor control.

Global Bionic Research Institutions



The global bionic research institutions map above based on Bionic Digital Library shows the number of bionic institutions in different countries around the world. The detail information can be found in the Bionic Digital Library at ISBE website.

PhD fellowship Biomimicry in Architectural Design at the University of Akron

The Biomimicry Research and Innovation Center BRIC at the University of Akroninvites applications for the position of a PhD student in Biomimicry in Architecture-in the 5 year Integrated Bioscience program.

Dr. Petra Gruber's lab is investigating spatial and functional aspects in biology by introducing tools and methods from architecture and design to scientific research, and translating findings into new solutions for the built environment.

We are looking for a highly motivated architecture or design graduate with knowledge and experience in computational and parametric design, programming and simulation, and use of advanced fabrication tools. Interest in scientific research and motivation to collaborate across disciplinary boundaries are required. Teaching and international experience are welcome. Applications are reviewed until the position is filled, starting date is fall 2017. Please contact: pgruber@uakron.edu for questions.

Admission: Letter of motivation, CV, portfolio, copies of certificates, reference lettersand requirementsset by the University of Akron https://www.uakron.edu/ib/academics/ib-admission-requirements.dot

Petra Gruber, Biomimicry Research and Innovation Center, University of Akron, Akron, OH 44325 USA.

Bionic Award Information

The International Bionic Award 2018 is endowed to support research and development oriented towards practical application and innovation by young scientists in the field of biomimetics.

Endowment: The International Bionic Award is endowed with 10.000 EUR by the Schauenburg-Foundation and will be awarded by VDI - The Association of German Engineers.

The Award will be presented for the sixth time in 2018. Relevant information will be communicated in advance and will be available on the website of the International Bionic Award (www.vdi.de/bionic2018). The award winning contribution will also be presented during this congress

Deadline for Submission of International Papers in English language: February 28, 2018

Jury

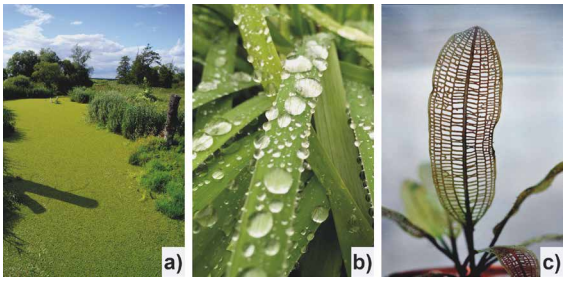
*Prof. Dr. Jerôme Casas, Université François-Rabelais Tours
*Dr. Rainer Erb, BIOKON e.V.
*Markus Fischer, Ingenieurbüro Markus Fischer
*Prof. Dr. Robert J. Full, University of California, Berkeley
*Prof. Dr. Michael Herdy, INPRO GmbH
*Prof. George Jeronimidis, University of Reading
*Prof. Dr. Antonia Kesel, Bionik-Innovations-Centrum Bremen
*Marc Georg Schauenburg, Schauenburg-Stiftung
*Prof. Dr. Thomas Speck, Universität Freiburg
*Dr. Stéphane Viollet, Aix Marseille University
*Dr. Ludwig Vollrath, FISITA, London
*Dr. Ljuba Woppowa, Verein Deutscher Ingenieure e.V.
*Prof. Dr. Zhengzhong Shao, Fudan University

The review entitled "Plant Surfaces: Structures and Functions for Biomimetic Innovations" was published in Nano-Micro Letters

Wilhelm Barthlott, University of Bonn, Germany

Professor Wilhelm Barthlott from the University of Bonn published a review on plant surface structures and biomimetic applications in a Springer open-access journal on 4 January, 2017.

In the review, an overview of plant surface structures and their evolution is presented. It combines surface chemistry and architecture with their functions and refers to possible biomimetic applications. Within some 3.5 billion years biological species evolved highly complex multifunctional surfaces for interacting with their environments: some 10 million living prototypes (i.e., estimated number of existing plants and animals) for engineers. The complexity of the hierarchical structures and their functionality in biological organisms surpasses all abiotic natural surfaces: even superhydrophobicity is restricted in nature to living organisms and was probably a key evolutionary innovation with the invasion of terrestrial habitatssome 350–450 million years ago in plants and insects. An extensive survey also including fungi and animals was published in June 2016 in Phil. Trans. R. Soc.:http://dx.doi.org/10.1098/rsta.2016.0191. A short overview of the history of bionics and the impressive spectrum of existing and anticipated biomimetic applications are provided. The major challenge for engineers and materials scientists, the durability of the fragile nanocoatings is also discussed.



The full pdf can be downloaded under http://link.springer.com/article/10.1007/s40820-016-0125-1.

Exploiting frictional anisotropy from a scale-like material for energy-efficient robot locomotion

Poramate Manoonpong, Denmark and Stanislav Gorb and Lars Heepe, Germany

Recently, Scientific Reports published a paper entitled "Enhanced Locomotion Efficiency of a Bio-inspired Walking Robot using Contact Surfaces with Frictional Anisotropy". This work, in collaboration between the robotic team in Denmark and the biomechanics team in Germany, presents a novel approach that exploits the interaction between a passive anisotropic scale-like material (e.g., shark skin) and rough surfaces to enhance locomotion efficiency of a robot walking on inclines.

Locomotion efficiency on rough surfaces is nontrivial; it can, however, be achieved or improved by employing the concepts of frictional anisotropy and mechanical interlocking between surfaces at the microscale. In principle, strong mechanical interlocking in one direction will allow a robot to grip the surface, thereby prevent-

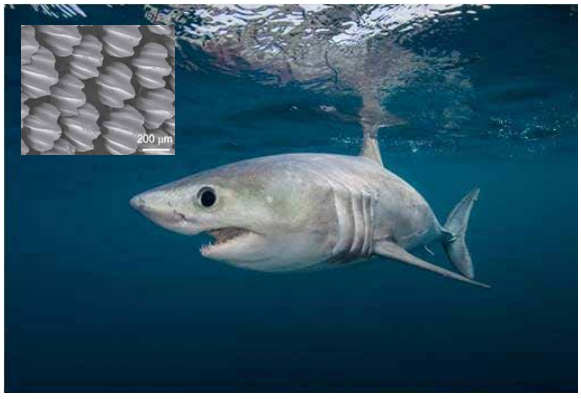


Figure 1: Shark and intact shark skin (inset). The shark photo is from Doug Perrine/SeaPics.com while the shark skin is adapted from Manoonpong et al. Scientific Reports, 2016.

ing it from slipping or sliding backward, while almost no mechanical interlocking in another direction will allow it to easily release itself from the surface while moving forward. Based on the principle, we exploit frictional anisotropy of a passive anisotropic scale-like material (shark skin) to enhance grip and locomotion of a bio-inspired walking robot.

The robot experimental results show that the anisotropic material (dry shark skin) can allow the robot to efficiently walk up different slope angles with different surfaces (laminated plywood, PVC plastic flooring, and carpet) without the need for any sensory feedback, modifying our existing locomotion control, or even redesigning our robot structures. This makes our solution simple and cheap. Our approach is also different from other developments which require complex motion control or/and special robot structures (e.g., active scales) to achieve frictional anisotropy for efficient locomotion.

Supplementing the robot experiments, we also systematically investigated the tribological and mechanical properties of shark skin. Particularly, we seek to investigate the effects of sliding direction, normal load, and substrate roughness on the friction behavior as well as its mechanical stability.

Taken together this work not only opens up a new way of achieving energy-efficient legged robot locomotion but also to a better understanding of the functionalities and mechanical properties of shark skin, which may guide the development of a new bio-inspired anisotropic scale-like material for future biomimetic applications.

The detail content is referred to: Manoonpong, P.; Petersen, D.; Kovalev, A.; Woergoetter, F.; Gorb, S.; Spinner, M.; Heepe, L. (2016) Enhanced Locomotion Efficiency of a Bio-inspired Walking Robot using Contact Surfaces with Frictional Anisotropy, Scientific Reports 6(39455) doi:10.1038/srep39455, Nature Publishing.

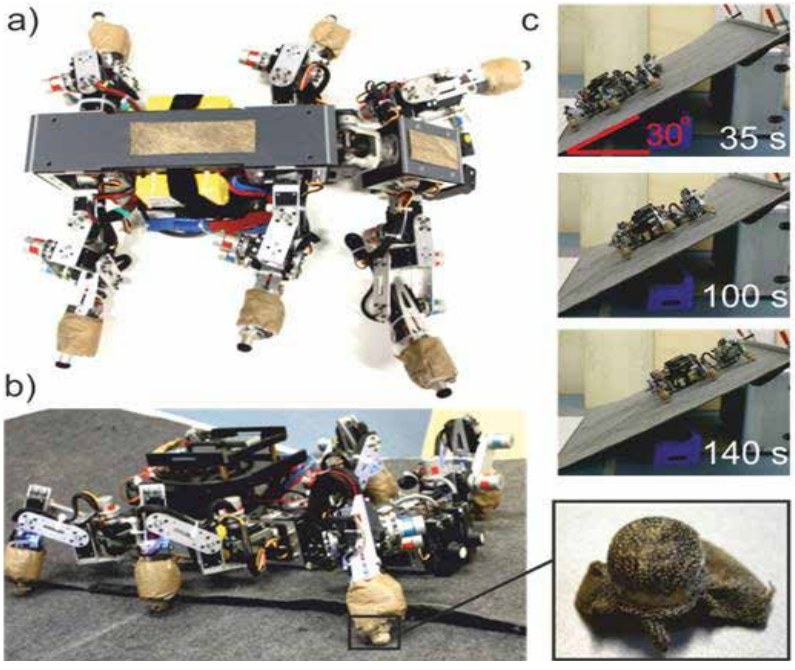
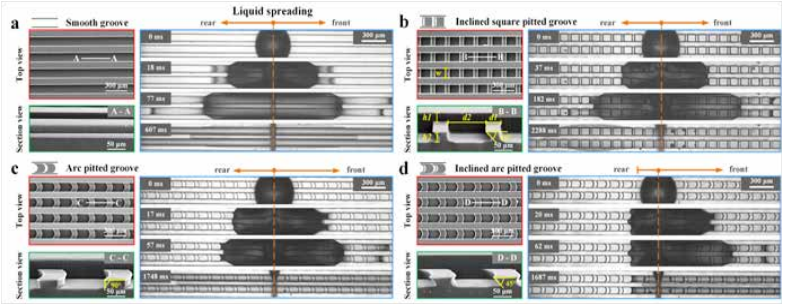


Figure 2: a) The bio-inspired hexapod robot AMOSII with shark skin at its belly. b) AMOSII with shark skin feet. c) Walking experiment of AMOSII with shark skin on a 30 deg slope covered by carpet. All pictures are adapted from Manoonpong et al. Scientific Reports, 2016.

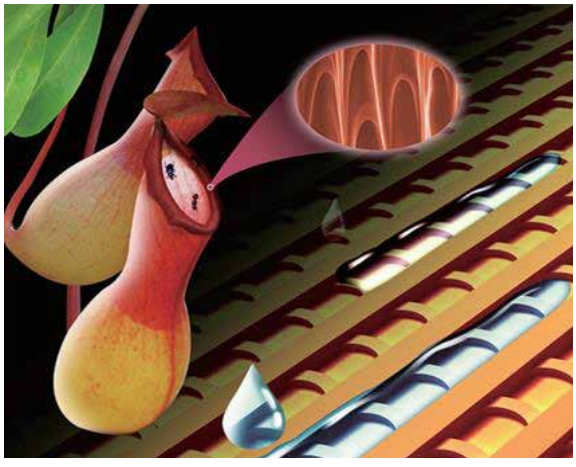
New progress in Bioinspired Uni-directional Liquid Spreading Surface from the Peristome of Nepenthes alata

Huawei CHEN, Beihang University, China



Uni-directional liquid spreading without energy input has gained much attention due to their potential applications such as microfluidic device and energy field. For the past years, various liquid directional transport strategies have been discovered from nature, such as spider silk and cactus spine with 1D conical spine structure, and desert beetle with patterned wettability.

Prof. Huawei Chen, Prof. Deyuan Zhang from Beihang University and Prof. Lei Jiang from Chinese Academy of Sciences have firstly discovered uni-directional liquid spreading on the peristome of N.alata. (Nature2016, 532, 85-89.)The structural characterization demonstrated that the uni-directional liquid spreading mainly results from its unique structural features, i.e., a sharp edge with an arch-shaped outline aligning at the bottom of the microgroove, which increases the difficulty of bionic fabrication. Recently, Prof. Chen's team extracted feature structures of the peristome surface for creative design, and finally developed two-step UV inclined photolithography to fabricate bioinspired uni-directional liquid spreading surface (Figure 1). This study was published on Journal Small in Special Issue: Superwettability, and chosen as cover article.(Small 2017, 13, 1601676.)



Various types of bioinspired surface were fabricated by tuning the feature structures, i.e., the shape of pit outline and pit inclined angle. Their effects on anisotropic liquid spreading were compared, and uni-directional liquid spreading was achieved with arc pit outline and inclined pitsimultaneously (Figure 2). The underlying mechanism has been further expanded by analyzing liquid spreading ability in front direction based on Taylor capillary rise effect and liquid pinning ability in rear direction through edge pinning effect.

This bioinspired uni-directional liquid spreading surface with long spreading distance and fast spreading speed properties can be applied on various fields such as microfluidic devices, non-powered deliver systems and self-lubrication in mechanical engineering.

Paper: http://onlinelibrary.wiley.com/doi/10.1002/smll.201770017/full

http://onlinelibrary.wiley.com/doi/10.1002/smll.201601676/full

Bio-Inspired Multi-Scale Pores and Channels

Yinglin Zhu, Feng Wu, Lingli Min, Zhizhi Sheng, Lizhi Huang, Miao Wang, Xu Hou*
Xiamen University, China *Email: houx@xmu.edu.cn http://xuhougroup.xmu.edu.cn/

By combining micro- and nano- pores/channels, the multi-scale systems are built to greatly promote the platforms and bring new opportunities for biosensors, molecular filtration, and ultra-sensitive chemical analysis. Building bio-inspired functional multi-scale pores/channels paves the way for mimicking the process of ionic/molecular transport in biological systems, as well as boosts the development of intelligent multi-scale machines in real world applications. For example, micropores in the walls among air sacs in the lung are filled with liquid that has been proposed to reversibly reconfigure to yield an open, fluid-lined pore in response to pressure gradients. Recently, Hou *et* al. utilized this idea of a reconfigurable fluid gate to reconcile the competing demands of responsive control, complex multiphase selectivity, and clogging prevention in a single integrated system (Fig. 1). This bio-inspired system could be applied to a variety of pore structures, material chemistries, and micro/macro-scale systems, suggesting opportunities for complex sorting in environmental, fuel, biomedical, microfluidics, 3D-printing, and other applications.

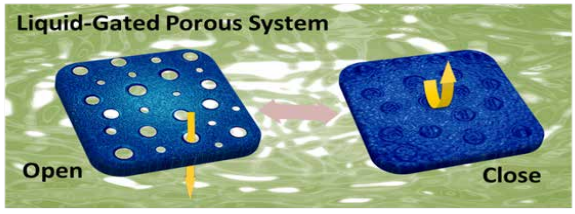


Figure 1. Learning from nature, a rapid, reversible, anti-fouling gating concept.

Acknowledgements:

We acknowledge Young Overseas High-level Talents Introduction Plan, and the National Natural Science Foundation of China (Grant No. 21673197) and the Fundamental Research Funds for the Central Universities of China (Grant No. 20720170050).

References:

Hou X. (2016) Design, Fabrication, Properties and Applications of Smart and Advanced Materials, Science Publishers/CRC Press, USA ISBN 978-1-4987-2248-3; Hou X. (2016) Smart Gating Multi-Scale Pore/Channel-Based Membranes, Advanced Materials, 2016, 28: 7049-7064.

Xu Hou Group (January 2017)

Experimental measurement of the wing and body kinematics of forward flight in drone-flies

Xiao Lei MOU, Yantai University, China

Meng and Sun have recently performed experimental measure-ment of the wing and body kinematics in drone-flies in free forward flight, using the high-speed video techniques. For the first time, detailed flapping kinematics of flies in full speed range (from hovering to maximum flight speed, about 8.5m/s) is obtained. After many trials, they finally managed to make the insect flying at the right time and in the right place in a wind tunnel (Fig. 1). They showed the variation of the flapping parameters with the flight speed (Fig. 2), and discovered some features never reported in previous literature, such as the wing rotation was mostly performed in the upstroke. They also found that the insect always keep the wing in suitable orientations for the vertical-force and thrust production.

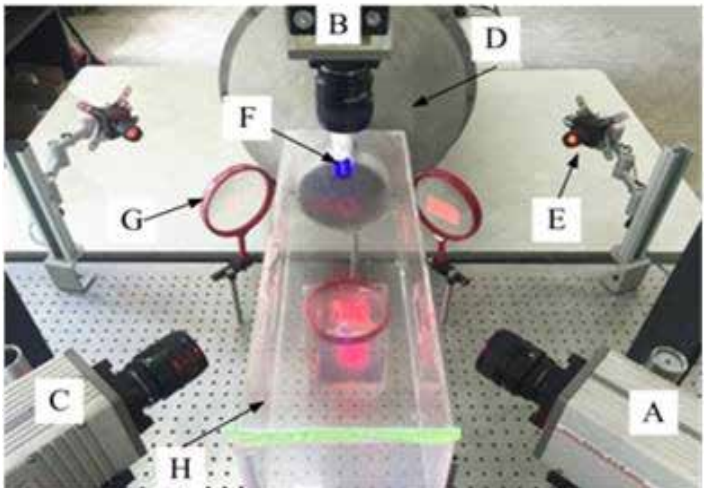


Figure 1. A photo showing the experimental setups. A, B and C are the three cameras; D is the wind tunnel; E is one of the three LED backlights; F is the ultraviolet light; G is one of the lenses; H is the flight chamber (adapted from Meng and Sun, B&B, 2016).

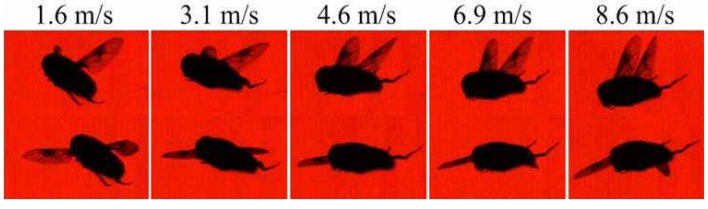


Figure 2. Pictures of dronefly flying at various speeds. At each flight speed, the picture at the top shows the insect at the end of an upstroke and that at the bottom shows the insect at the end of the subsequent downstroke.

Send an email to ISBE Secretariat

ISBE Secretariat is always calling for news and ideas among our members, if there is any information you would like to include in a future edition of newsletter, please feel free to contact us.

Email: gyue@isbe-online.org

Tel/ Fax: +86-431-85166507

Address: Dingxin Building, Jilin University, 2699 Qianjin Street, Changchun P. R. China

2017 International Workshop on Bionic Engineering (IWBE 2017)

June 13-14, 2017, Denkendorf, Germany

Organizers: International Society of Bionic Engineering (ISBE)
German Institute for Textile and Fibre Research Denkendorf (ITV Denkendorf)

Topics: The lectures and attendees in the workshop will present and discuss new knowledge in biological science and bionic transfer regarding energy.

Registration:

Registration type	**Registration fees**	**Fees including**
Paid Member	€180 (early bird) € 200	workshop materials catering during the workshop transfer from the hotels to the workshop welcome dinner attendance to the workshop
Standard Delegate	€220 (early bird) €240	

* Early Registration Deadline: 30 April 2017.

The On-line Registration System will open in the near future!

Location: Institute of Textile Technology and Process Engineering (ITV Denkendorf),
German Institute for Textile and Fibre Research Denkendorf (DITF Denkendorf),
Koerschtalstrasse 26, 73770 Denkendorf, Germany

If you have questions:

Secretary of ISBE, Jilin University, China

secretariat@isbe-online.org

Secretary of ITV Denkendorf, Germany

Casey Metcalf: e-mail: casey.metcalf@itv-denkendorf.de; phone: 0049 711 9340 510

The 1st International Youth Conference of Bionic Science and Engineering (ICBSE2017)

July 28-31, 2017, Lanzhou, China

To meet the bionic scientists' demand of academic communication, the 1st International Youth Conference of Bionic Science and Engineering (ICBSE2017) will be held in Lanzhou, 28-31, July 2017. This conference will be sponsored by the Youth Committee of International Society of Bionic Engineering (ISBE), organized by Lanzhou Institute of Chemical Physics (LICP), Chinese Academy of Science. This conference aims to provide an international forum for youth or outstanding scientists and engineers around the world who are interested in the field of bionic science and engineering. Conference details as below.

Conference Theme

Biological interface and functionalization
Biomimetic Materials;
Biomimetic Structures and Mechanics;
Artificial Intelligence and Sensors;
Biomimetic Engineering
PhD Special Session

Chair and Committee of the Conference

The Honorary Chair of Conference: Professor Julian Vincent
The Chair of Academic Conference: Academician Luquan Ren (Jilin University)
Academician Weimin Liu (LICP)

Scientific Committee: Carlo Menon, Huilin Duan, Zhendong Dai, Zhiwu Han, Yinan Lai, Jianqiao Li, Michael R. Kin, Chengxin Pei, Thomas Stegmaier, Shutao Wang, Wenjian Wu, Fengyuan Yan, Yuying. Yan, Deyuan Zhang, Yongmei Zheng, Feng Zhou Conference Chair: Dr. Zhiguang Guo (LICP)
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Cooperating Organizations

Sponsor: International Society of Bionic Engineering (ISBE)

Organizers: Youth Committee of ISBE, LICP and State Key Laboratory of Solid Lubrications

Collaborators: Chinese Academy of Science (CAS), National Natural Science Foundation of China (NSFC), Jilin University, Northwest Normal University, Zhejiang University of Technology, Southeast University, Nanjing University of Aeronautics and Astronautics , Beijing University of Aeronautics and Astronautics , Tsinghua University

Submissions

The abstract submissions in English should be original, succinct, credible and valuable. It should contain about 500 words in a format of Word (doc). All the normative abstract submissions will be included in conference proceedings. We encourage faculty and students to jointly submit full papers that significantly advance the development of bionic science and engineering. These excellent papers will be recommended to publish on “Journal of Bionic Engineering”, “RSC Advances” and “Chemistry Letters”.

Important Dates

Abstract submission deadline/ acceptance: 25.01.2017/25.03.2017

Full text submission deadline/ acceptance: 25.03.2017/25.05.2017

Early bird registration deadline: 25.05.2017

Conference date: 28.07.2017/31.07.2017

Registration and Charge

Conference Address: Lanzhou Institute of Chemical Physics, Tianshui Middle Road 18#, Lanzhou, Gansu Province of China

Early Registration: 1000 RMB/500 RMB (Privilege for PhD student);

Normal Registration: 1200 RMB/600 RMB (Privilege for PhD student)

Conference Hotel: Feitian Hotel,Yujian Hotel, Huayu Hotel

Contact Us

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June 28-July 1, 2017
Jpark Island Resort & Waterpark, Cebu, Philippine

Call for Papers

On behalf of the organizing committee of the 10th International Symposium on Nature- Inspired Technology (ISNIT2017), we would like to cordially invite you to ISNIT2017 that will be held at Jpark Island Resort & Waterpark (Cebu, Philippine) from June 28 to July 1, 2017.
We planned outstanding scientific programs including plenary lectures, invited talks, and oral/poster sessions, covering the following key themes.

- Nature-Inspired Sensors & Actuators
- Nature-Inspired Robotics & Biomechanics
- Nature-Inspired Materials
- Nature-Inspired Surface & Structures
- Nature-Inspired Fluid Dynamics
- New Discovery of Smart & Fusion Tech.

Welcome reception and conference banquet will allow for extended interactions and discussion among participants. We very much look forward to your submission of abstracts in all areas of nature- inspired technology (not limited to the themes described above). Further information and submission instructions will be available at website: http://www.isnit.org

Important dates:
Deadline of abstract submission: ~~Feb. 10, 2017~~ ➡ Feb. 28, 2017
Notification of acceptance: March 17, 2017
Early Registration: April 21, 2017

Co-Organizing Chairs: Professor Seung-Yop Lee, (Sogang University, Korea)
Professor Lei Jiang (Chinese Academy of Sciences, China)
Professor Masatsugu Shimomura (Chitose Institute of Sci. &Tech., Japan)

Contact: secretariat@isnit.org http://www.isnit.org

The Korean Society of Mechanical Engineers

FIRST ANNOUNCEMENT AND CALL FOR PAPERS

6-th International Workshop on
New Trends in Medical and Service Robotics
MESROB 2018

3-5 July 2018: Cassino, Italy

The aim of the Conference is to bring together researchers and practitioners dealing with multi-disciplinary aspects of medical and service robotics and applications in an intimate, collegial and stimulating environment.

MESROB 2018 continues a successful series of workshops that has been started in 2012.

The Conference will be held at the School of Engineering of the University of Cassino and South Latium in Cassino, Italy.

TOPICS

Papers are solicited on topics including (but not limited to):

- Design of medical devices
- Kinematics and Dynamics for medical robotics
- Exoskeletons and prostheses
- Anthropomorphic hands
- Therapeutic robots and rehabilitation
- Cognitive robots
- Humanoid & Service robots
- Assistive robots and elderly assistance
- Surgical robots
- Human-robot interfaces
- Haptic devices
- Medical treatments

The Scientific Committee will select papers for presentation at the conference.

PAPER ELECTRONIC SUBMISSION

Full paper should be sent in PDF format by e-mail before April 15th, 2018 though EasyChair.

Only papers with at least one author as registered participant will be included in the Proceedings that will be pubblished as a Springer book.

PRESENTATION AND PROCEEDINGS

The official language of the Workshop will be English. Overhead projectors will be available for presentation. Registered participants will receive one copy of the Proceedings.

Web Page

http://www.larmlaboratory.net/mesrob2018/

LOCATION

Cassino is a modern town since it has been completely rebuilt after the destruction during the World War II and it is well known for the Montecassino Abbey. Cassino is located just below the mountain where the Montecassino Abbey is situated.

In July the weather is fine, sunny temperatures often above 25°C.

Organized by

LARM at DiCEM, University of Cassino and South Latium, Italy

Supported by

University of Cassino and South Latium

IFToMM TC of Biomechanical Engineering

IFToMM TC of Robotics and Mechatronics

Newsletter

ISBE Newsletter

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ISBE NEWSLETTER

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