2024

Advanced Biomedical Instrumentation Centre
先進生物醫學儀器中心

NEWSLETTER

ISSUE 04

FROM LAB TO LIFE / ABIC'S INNOVATIONS STRIVE

'ABIC International Symposium on Biomedical Research Translation 2024' pioneers the future of biomedical innovations by translating discoveries into tangible healthcare improvements

The one-day program aims to further ABIC's ongoing efforts in establishing international connections through the assembly of distinguished minds. The exchange of ideas and expertise propels advancements in biomedical research, and translates discoveries into tangible improvements in healthcare. By working together across borders and disciplines, the event reinforced the necessity of tackling pressing challenges and creating lasting impacts on the biomedical fields.

Prof. Anderson Shum, Centre Director of ABIC, commenced the symposium with welcome remarks, expressing his ambitions for the prestigious gathering. Dr. Sunny Chai, SBS, BBS, JP, Chairman of Hong Kong Science and Technology Parks Corporation, affirmed ABIC's endeavors with robust national support and a dynamic local ecosystem in his opening remarks. Prof. Sun Dong, JP, Secretary for Innovation, Technology and Industry of the Hong Kong SAR Government, shared his vision about the I&T development of Hong Kong in the keynote.

Prof. Sun Dong, JP, Secretary for Innovation, Technology and Industry of the Hong Kong SAR Government, was the keynote speaker.
In his remarks, Prof. Sun highlighted that promoting innovation and technology (I&T) has been running high:

"It is exciting news that Hong Kong once again has 5 universities in the world's top 70, as announced by the QS World University Rankings a few days ago. 3 of them, are ranked in the top 50; and HKU the top 17th. Hong Kong's strong R&D capability and world-class researchers are being recognized globally. As one of the most international cities in the world, Hong Kong has been playing a vital role in fostering the local I&T collaboration."

Prof. Anderson Shum, Centre Director of ABIC, commenced the symposium with welcome remarks, expressing his ambitions of bringing together such a prestigious gathering:

"Together, let's continue our collaborative efforts to network with the world's talented scientists, industry partners, universities, institutions, and governments to tackle the challenges in the biomedical area and drive sustainable technology innovation. I hope this forum will foster new partnerships and inspire continued innovations to create a brighter future for the world."

Dr. Sunny Ngai-chiu Chai, SBS, BBS, JP, Chairman of Hong Kong Science and Technology Parks Corporation, affirmed ABIC's endeavors with robust national support and a dynamic local ecosystem in his opening remarks:

"ABIC is under InnoHK who has emerged as a leader in health technology, showcasing the potential power of collaborative innovation in health care and setting a scene for the industry's future."

The event attracted a remarkable lineup of domain experts from renowned universities and research institutions around the globe, fostering scholarly dialogue on the translation of biomedical innovations. Notable speakers are briefly listed as follows:

Prof. Andreas Bausch (TUM)
Prof. Barbara Chan (CUHK)
Prof. Rong Fan (Yale)
Prof. Daniel Fletcher (UCB)
Prof. Wei Gao (Caltech)
Prof. Tuomas Knowles (Cambridge)
Prof. Jia Liu (Harvard SEAS)
Prof. Lingyan Shi (UCSD)
Prof. Anderson Shum (HKU)
Prof. David Weitz (Harvard SEAS)
Prof. Denis Wirtz (Johns Hopkins)
Prof. Kenneth Wong (HKU)
Prof. Bing Xu (Brandeis)
Prof. Shrike Zhang (Harvard Med)
Prof. Yongguan Zhu (UCAS)

Furthermore, the event scheduled sound bites sessions contributed by next-generation researchers and entrepreneurs, offering them a valuable platform to circulate their innovative projects, share their experiences on science research and commercialization, and engage with the broader biomedical community. In addition to the speeches, the Centre has also showcased their award-winning innovations from the Geneva International Exhibition of Inventions 2024.

The symposium also featured the signing of Memoranda of Understanding (MOU) with three esteemed partners – Bioworld Ventures, China Prosperity Capital and Gaw Capital – signifying ABIC's commitment to research translation.

15th Guanghua Engineering Science and Technology Award

On 25 June 2024, Professor Anderson Ho Cheung SHUM, Centre Director of the Advanced Biomedical Instrumentation Centre (ABIC), received the 15th Guanghua Engineering Science and Technology Award from the Chinese Academy of Engineering (CAE) for his distinguished achievements and important contributions in the fields of engineering science and technology, and engineering management. The biennial award is regarded as the most prestigious in Chinese engineering industry.

Prof. Shum expressed deep gratitude, stating that this honor represents a testament to the collective accomplishment of his team and collaborators. Emphasizing the team's potential for continuous growth and development, he aspires to maintain the mentality of "ten years of sharpening a sword" to further contribute to the advancement of science and technology.

The "Microfluidic Aqueous Two-Phase Systems" approach proposed and directed by Prof. Shum and his team have been instrumental to the advancement of droplet microfluidics technology in the disciplines of biomedical engineering, pharmaceutical development, and environmental monitoring, resolving biocompatibility issues that arise from the traditional "oil-water interfaces" with fundamental benefits to human health.

This all-aqueous system has a diverse array of potential applications, including the simulation of in-vivo environment of organisms for drug screening and disease diagnosis, useful for the discovery of novel materials and devices, such as organoids and micro-sensors, that are expected to resolve the pressing needs of "artificial cells" and other critical scientific challenges.

Moving forward, Prof. Shum and his team will continue to translate research through practical actions and innovative mindsets in developing high-quality medical instruments, with significant dedication to advancing science and technology, social development, and the well-being of individuals worldwide.

The Youngest Scientist Among All Awardees This Year

Ir Prof. Anderson Ho Cheung SHUM received his B.S.E. degree, summa cum laude, in Chemical Engineering from Princeton University, S.M. and Ph.D. degrees in Applied Physics from Harvard University. He is currently a Professor (Tenured) in the Department of Mechanical Engineering and Associate Vice-President (Research and Innovation) at the University of Hong Kong (HKU). He also serves as the Centre Director of the Advanced Biomedical Instrumentation Centre, and Non-official Committee Member of the Committee on Innovation, Technology and Industry Development of Hong Kong SAR government. His research interests include aqueous two-phase systems, emulsions, biomicrofluidics, biomedical engineering, and soft matter.

CETV interviewed with Prof. Shum

Prof. Shum is highly recognized for his pioneering contributions, receiving international scientific honors including but not limited to: Awardee of RGC Senior Research Fellow Scheme (SRFS, 2024), Gold Medal and International Special Award in 8th International Invention Innovation Competition in Canada (iCAN, 2023), Gold Medal in 48th International Exhibition of Inventions (Geneva, Switzerland, 2023), the inaugural Hong Kong Engineering Science and Technology (HKEST) Award by the Hong Kong Academy of Engineering Sciences (HKAES, 2023), NSFC Excellent Young Scientist Fund (2019), IEEE Nanomed New Innovator (2018), HKU Outstanding Young Researcher Award (2016-17), HKU Research Output Prize (2017), and Early Career Award by the Research Grants Council of Hong Kong (2012). First in Hong Kong, Prof. Shum has been selected as Global Young Academy Member (since 2021).

He was also selected as Fellows of the International Association of Advanced Materials (FIAAM, 2023), Hong Kong Institution of Engineers (FHKIE, 2023), Royal Society of Chemistry (FRSC, 2017), Awardee of Croucher Senior Research Fellowship (2020), and as President (since 2021) and Founding Member (since 2018) of Hong Kong Young Academy of Sciences. He currently serves as Editorial Board Member for Microsystems and Nanoengineering (Springer Nature), Scientific Reports (Springer Nature), and Colloids and Interfaces by MDPI AG, as well as Editorial Advisory Board Member for Lab-on-a-Chip (RSC) and Associate Editor for Biomicrofluidics (American Institute of Physics).

Guanghua Engineering Science and Technology Award

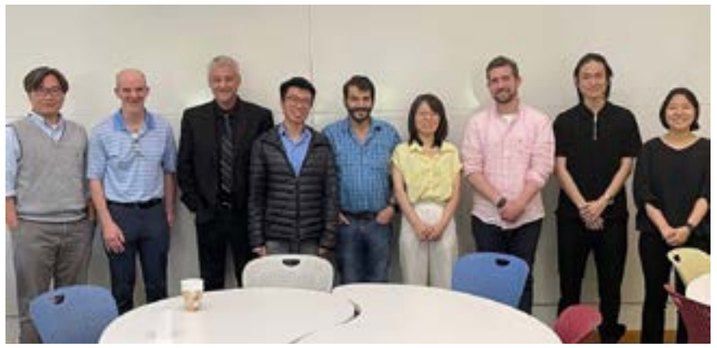
The Guanghua Engineering Science and Technology Award is an engineering science and technology award administered by the Chinese Academy of Engineering (CAE), and has been presented to Chinese engineering science and technology experts biennially since 1996 to commend their important contributions and outstanding achievements in the fields of engineering science and technology management.

It is also the most prestigious award in the Chinese engineering industry, categorized into nine divisions: Mechanical and Vehicle Engineering; Information and Electronics Engineering; Chemical, Metallurgical and Materials Engineering; Energy and Mining Engineering; Civil, Hydraulic and Architecture Engineering; Environment & Light and Textile Industries Engineering; Agriculture; Medicine and Health Engineering; and Engineering Management.

There have been 383 awardees and one group prize over 15 rounds of selection since the award was established. This year, 41 awardees were selected in total.

Exciting Day at the 'ABIC/Harvard Symposium' Hosted at Harvard University!

The Advanced Biomedical Instrumentation Centre (ABIC) and Harvard University successfully co-hosted the ABIC/Harvard Symposium at Harvard University on 24 May 2024. This event brought together an impressive lineup of renowned scholars and industry experts to engage in stimulating exchange of ideas and insights.



The symposium featured presentations and discussions led by a distinguished group of speakers, including:

Prof. Paddy Chan (ABIC / HKU)
Dr. Fawwaz Habbal (Harvard SEAS)
Prof. Tuomas Knowles (Cambridge)
Prof. David Mooney (Harvard SEAS)
Dr. Maarten Postema (XtalPi Inc.)
Prof. Anderson Shum (ABIC / HKU)
Prof. David Weitz (Harvard SEAS)

Fascinating discussions on the latest advancements in science, engineering, and biomedical instrumentation. Truly inspiring to witness these brilliant minds convene for cross-disciplinary and cross-institutional exchange.

Strengthening Cross-border Connections, ABIC Hosts Influential Chinese Delegations

Over the past months, ABIC had the privilege of welcoming several high-level Chinese delegations.

These visits fostered productive dialogues and strengthened the collaborative ties between ABIC and the representatives from mainland China.

The delegations gained deep insights into ABIC's world-class capabilities, cutting-edge innovations, and pioneering research initiatives through comprehensive presentations, interactive demonstrations, and behind-the-scenes tours. We look forward to continuing this fruitful cooperation in the years ahead!

On 8 Mar 2024
Dongguan delegation

On 12 Jan 2024
Foshan delegation

On 8 May 2024
Fuzhou delegation

ABIC's Breakthroughs Captions Ground at Hong Kong Engineering Week 2024

ABIC had an incredible time at the carnival of "Hong Kong Engineer Week 2024" on 2-3 March 2024, showcasing our cutting-edge biomedical instrumentations!

Our booth was bustling with vitality as we unveiled our latest innovations to the enthusiastic audience.

We extend our heartfelt gratitude to Hong Kong Institution of Engineers (HKIE) for inviting us to participate in the carnival.

Secondary Student Visit to Advanced Biomedical Instrumentation Centre, Co-organized with Caritas

ABIC tailored the visiting tour on 10 May 2024 to include four informative lessons, each delving into a specific biomedical domain to captivate the immersive interests of the secondary students. They came from Sheung Tak Catholic English College, Pope Paul VI College and St. Louis School.

These lessons aimed to offer students with comprehensive overview of how biotechnology can influence our lives. Subsequent to the lessons, we arranged a lab tour, allowing the students to observe the daily work of our researchers. To further enhance their experience, we allocated a biotech dialogue session between the students and our researchers, Mr. Zou Tao, Dr. Dickson Siu, and Dr. Madhav Gupta. Our Centre Principal Investigator, Prof. Aviva Chow, advised the students on career planning and motivated them to implement the efficient learning tool of questioning. Our Research Director, Mr. Kentman Chan suggested that the students embrace lifelong learning to continuously seek new knowledge in difference stages of their careers.

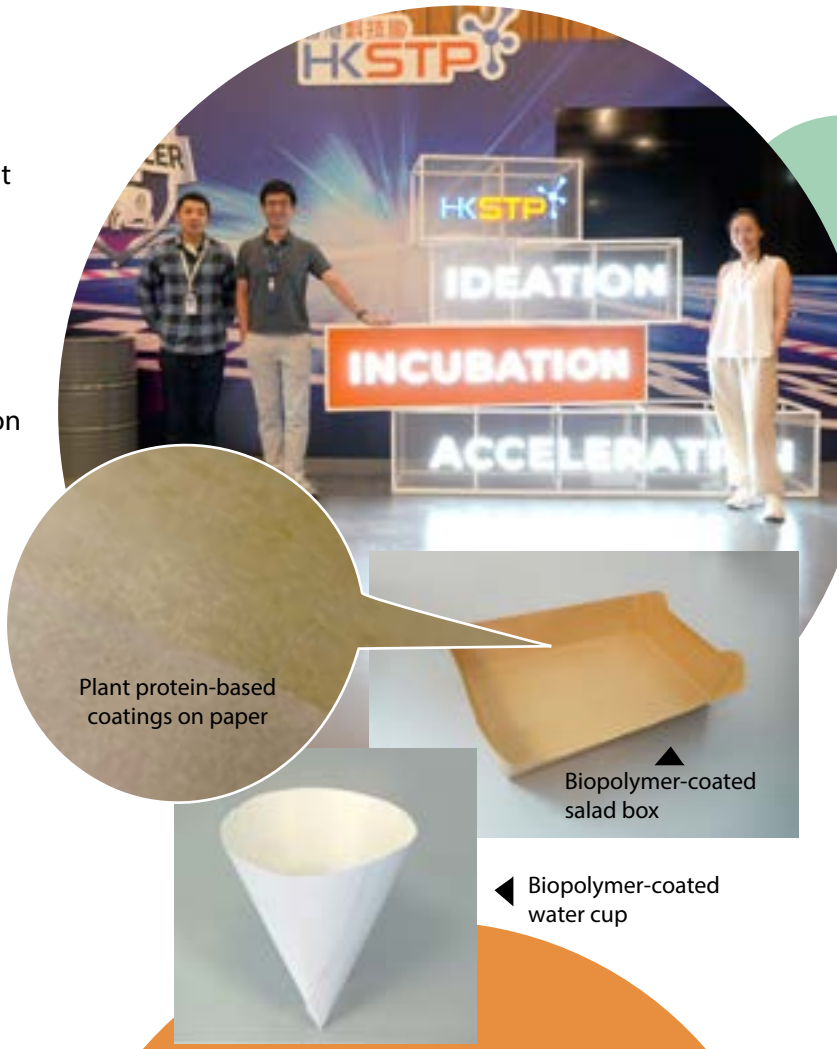
ABIC Spin-off Company: Upgrade Biopolymers Limited Admitted to Hong Kong Science and Technology Parks Incubation Program, Attracting Top Talents

Upgrade Biopolymers Limited, a promising spin-off from ABIC for commercialization, has been successfully admitted to the prestigious incubation program offered by the Hong Kong Science and Technology Parks (HKSTP). Recently, the company attracted 3 top talent to land in Hong Kong.

Upgrade Biopolymers Limited

Founded by Prof. Li Xiufeng

The company specializes in plant proteins from agricultural side streams, developing energy-efficient separation strategies to obtain novel food proteins and create eco-friendly alternatives to fossil-derived materials. They offer sustainable plant protein ingredients and re-engineer plant-derived polymers into functional materials, such as coatings and films, to replace single-use plastics, reduce microplastic pollution, and improve precision in drug and nutrition delivery.



Plant protein-based coatings on paper

Biopolymer-coated salad box

Biopolymer-coated water cup

Product Functionality

- They upgrade the value of plant-based ingredients by using them as building blocks and re-engineering them into sustainable, functional products for applications in foods, personal care and cosmetics, healthcare and medical device industries.

- Their innovations aim to reduce the ecological impact of traditional fossil-based materials and protein production, contributing to a carbon-neutral future.

Ingredients

- They develop mild separation techniques to extract proteins from novel plant resources, preserving their native properties and maintaining maximum functionality during the fractionation process, all while minimizing the carbon footprint.

Upgrade Biopolyers Limited has been shortlisted for the Finale of the 2024 HKU International Techno-Entrepreurship Challenge. They will persent their work at the Grand Finale in January 2025. Stay tuned!