For favour of posting

The Chinese University of Hong Kong
Department of Chemistry
Research Seminar Series

Speaker: Professor Jye-Shane Yang
Department of Chemistry
National Taiwan University

Title: Pentiptycene-Incorporated pi-Conjugated Oligomer and Polymers

Date: September 10, 2018 (Monday)

Time: 2:30 p.m.

Venue: Room G34
Lady Shaw Building

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Contact Person:
Prof. Hak-Fun Chow

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The Chinese University of Hong Kong
Department of Chemistry
Research Seminar Series

Speaker: Professor Becki Y Kuang
Department of Chemical and Biological Engineering
The Hong Kong University of Science and Technology

Title: Synthetic RNA gene circuit for in situ cell sorting

<< Abstract >>

In stem cell based tissue engineering, especially that uses differentiated cells, identification of cell type is of great necessity.

While antibodies and toxin fused marker protein are good enough for analysis purpose in laboratory setting, they are not applicable for examining cells for clinical use. A safe (non-toxic and non-invasive) and thorough method is needed to serve as the safety-guard procedure before transplantation, to recognize and, preferably, to specifically eliminate the unwanted cells. The diversity of RNA and the inertness of RNA to genome, allow use to create synthetic RNA devices for in situ cell sorting. Here I present recent development of microRNA sensing RNA circuits. Taken the advantage of naturally occurring microRNA mediated mRNA degradation mechanism, we succeeded in building single-, dual- and triple-component logical circuits that can effectively distinguish and eliminate specific type of cell based marker microRNA expression.

Chemical and biological engineering was employed to enhance the sensitivity and effectiveness of the RNA circuits. The establishment of such devices has great potential for various biomedical uses. We believe our approaches will not only facilitate the transition of iPSC technology from laboratorial to clinical use, but also have a great potential in other aspects of in biomedical cell based therapies and targeted treatments.

Date: September 13, 2018 (Thursday)

Time: 3:30 p.m.

Venue: Room 404
William M W Mong Eng Bldg

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Contact Person:
Prof. Bo Zheng

For favour of posting

The Chinese University of Hong Kong
Department of Chemistry
Research Seminar Series

Speaker: Professor Siddhartha Roy
Department of Biophysics
Bose Institute
India

Title: Peptide-based Protein-Protein and Protein-DNA interaction inhibitors: Could they become Drugs?

Date: September 21, 2018 (Friday)

Time: 4:30 p.m.

Venue: L1
Science Centre

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Contact Person:
Prof. Jiang Xia

For favour of posting

The Chinese University of Hong Kong
Department of Chemistry
Research Seminar Series

Speaker: Professor Feihe Huang
Department of Chemistry
Zhejiang University

Title: Nonporous Adaptive Crystals (NACs) for Separation and Adsorption

Date: September 24, 2018 (Monday)

Time: 10:30 a.m.

Venue: L4
Science Centre

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Contact Person:
Prof. H.F. Chow

Nonporous Adaptive Crystals (NACs) for Separation and Adsorption

Feihe Huang

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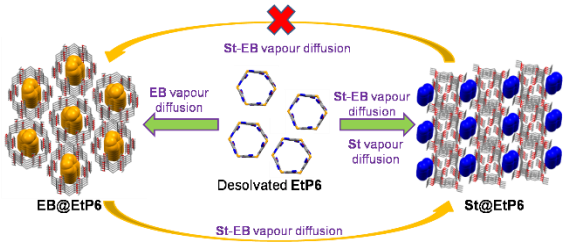
In the chemical industry, distillation is a very important method to purify chemicals. In fact, distillation takes about 10-15% of global energy consumption. This is equal to 100 million tons of carbon dioxide emissions and 4 billion dollars in energy costs annually. Therefore, it is necessary to develop energy-saving approaches to purifying chemicals. For this purpose, adsorption and separation based on porous materials have been widely investigated. There are two main types of porous materials. At macromolecular level, we have zeolites, MOFs, and COFs. They are crosslinked organic and inorganic polymer networks. At molecular level, we have porous organic cages or POCs. In this talk, I will introduce a novel kind of solid materials for adsorption and separation, nonporous adaptive crystals (NACs), which function at the supramolecular level. They are nonporous in the initial crystalline state, but the intrinsic or extrinsic porosity of the crystals along with a crystal structure transformation is induced by preferable guest molecules. Unlike solvent-induced crystal polymorphism phenomena of common organic crystals that occur at the solid-liquid phase, NACs capture vaporized guests at the solid-gas phase. Upon removal of guest molecules, the crystal structure transforms back to the original nonporous structure. I will focus on the discussion of pillararene-based NACs for adsorption and separation and the crystal structure transformations from the initial nonporous crystalline state to new guest-loaded structures during the adsorption and separation processes. Compared with traditional porous materials, NACs of pillararenes have several advantages. First, their preparation is simple and cheap and they can be synthesized in large-scale to meet practical demands. Second, pillararenes have better chemical, humid and thermal stability than crystalline MOFs, COFs and POCs, which are usually constructed based on reversible chemical bonds. Third, pillararenes are soluble in many common organic solvents, which means that they can be easily processed in solution. Fourth, their regeneration is simple and they can be reused many times with no decrease in performance. It is expected that this kind of materials will not only exert significant influence on scientific research, but also show practical applications in the chemical industry.



References: (a) Jie, K.; Liu, M.; Zhou, Y.; Little, M. A.; Bonakala, S.; Chong, S. Y.; Stephenson, S. Y.; Chen, L.; Huang, F.;* Cooper, A. I.* "Styrene Purification by Guest-Induced Restructuring of Pillar[6]arene" *J. Am. Chem. Soc.* **2017**, *139*, 2908. (b) Jie, K.; Zhou, Y.; Li, E.; Li, Z.; Zhao, R.; Huang, F.* "Reversible Iodine Capture by Nonporous Pillar[6]arene Crystals" *J. Am. Chem. Soc.* **2017**, *139*, 15320. (c) Jie, K.; Zhou, Y.; Li, E.; Zhao, R.; Liu, M.; Huang, F.* "Linear Positional Isomer Sorting in Nonporous Adaptive Crystals of a Pillar[5]arene" *J. Am. Chem. Soc.* **2018**, *140*, 3190. (d) Jie, K.; Liu, M.; Zhou, Y.; Little, M. A.; Pulido, A.;

Chong, S. Y.; Stephenson, A.; Hughes, A. R.; Sakakibara, F.; Ogoshi, T.; Blanc, F.; Day, G. M.;* Huang, F.;* Cooper, A. I.* "Near-Ideal Xylene Selectivity in Adaptive Molecular Pillar[*n*]arene Crystals" *J. Am. Chem. Soc.* **2018**, *140*, 6921. (e) Jie, K.; Zhou, Y.; Li, E.; Huang, F.* "Nonporous Adaptive Crystals of Pillararenes" *Acc. Chem. Res.* **2018**, *51*, DOI: 10.1021/acs.accounts.8b00255. (f) Jie, K.; Zhou, Y.; Li, E.; Zhao, R.; Huang, F.* "Aromatics/Cyclic Aliphatics Separation by Nonporous Adaptive Pillararene Crystals" *Angew. Chem. Int. Ed.* **2018**, *57*, DOI: 10.1002/anie.201808998.

Feihe Huang obtained his PhD from Virginia Tech under the guidance of Prof. Harry W. Gibson in March 2005. Then he joined Prof. Peter J. Stang's group at University of Utah as a postdoctor. He returned to China to work at Zhejiang University as a full professor in December 2005. He is Changjiang Scholar Chair Professor of Zhejiang University now. His current research is focusing on nonporous adaptive crystals (NACs). Awards and honors he has received include Fellow of the Royal Society of Chemistry, Asian Chemical Congress Asian Rising Star, Chinese Chemical Society AkzoNobel Chemical Sciences Award, the Cram Lehn Pedersen Prize in Supramolecular Chemistry, Royal Society of Chemistry Polymer Chemistry Lectureship award, Chang Jiang Scholar, and The Royal Society Newton Advanced Fellowship award. His publications have been cited more than 18487 times. His h-index is 72. He was selected onto the list of ISI highly cited researchers from 2015 to 2017. He has served as a guest editor for Chem Soc Rev, Acc Chem Res, Chem Rev, Adv Mater, and Chem Commun. He sits/sat on the Advisory Boards of Chem Soc Rev, Chem Commun, Acta Chim Sinica, Macromolecules, ACS Macro Lett, and Polym Chem. He is an Editorial Board Member of Mater Chem Front.