HENG-YU CHI

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EDUCATION AND ACADEMIC APPOINTMENT

Ph.D. 2020.02-present
Department of Chemistry and Chemical Engineering
École Polytechnique Fédérale de Lausanne (Switzerland)

M.S. 2018.08-2019.12
Department of Chemical Science
King Abdullah University of Science and Technology (Saudi Arabia)
GPA Overall: **3.93**/4.00

FULL-TIME RESEARCH ASSISTANT 2016.07-2018.07
Department of Chemical Engineering
National Taiwan University (Taiwan)

B.S. 2012.09-2016.01
Department of Applied Chemistry
National Chiao Tung University (Taiwan)
Rank: **2**/45
GPA Overall: **4.16**/4.30, Major: **4.20**/4.30, Last 60: **4.22**/4.30

PUBLICATIONS

1. R. Wei,‡ **H.-Y. Chi**,‡ X. Li, D. Lu, Y. Wan, C.-W. Yang, Z. Lai, Aqueously Cathodic Deposition of ZIF-8 Membranes for Superior Propylene/Propane Separation. *Adv. Funct. Mater.*, **2020**, 30, 1907089. **(‡co-first author)** [link] **(Inside Front Cover)** [link]
2. **H.-Y. Chi**,‡ S.-H. Hung,‡ M.-Y. Kan, L.-W. Lee, C. H. Lam, J.-J. Chen, D.-Y. Kang, Metal–Organic Frameworks for Dye Sorption: Structure–Property Relationships and Scalable Deposition of the Membrane Adsorber. *CrystEngComm*, **2018**, 20, 5465-5474. [link]
3. H. Ting,‡ **H.-Y. Chi**,‡ C. H. Lam, K.-Y. Chan, and D.-Y. Kang, High-Permeance Metal-Organic Framework-Based Membrane Adsorber for Removal of Dye Molecules in Aqueous Phase. *Environ. Sci. Nano*, **2017**, 4, 2205-2214. **(‡co-first author)** [link]
4. C. H. Lam,‡ **H.-Y. Chi**,‡ S.-M. Hsu, Y.-S. Li, W.-Y. Lee, I-C. Cheng, and D.-Y. Kang, Surfactant-Mediated Self-Assembly of Nanocrystals to Form Hierarchically Structured Zeolite Thin Films with Controlled Crystal Orientation. *RSC Adv.*, **2017**, 7, 49048-49055. **(‡co-first author)** [link]
5. **H.-Y. Chi**,‡ C.-C. Tsai,‡ Y.-J. Chiu, and J.-T. Chen, Breaking Embedded Electrospun Fibers (BEEF): Fabrication of Polymer Spheres Encapsulated in Polymer Films. *J. Polym. Sci. Part B Polym. Phys.*, **2016**, 54, 2463-2470. [link] **(Cover Image)** [link]
6. J. Hao, D. J. Babu, Q. Liu, **H.-Y. Chi**, C. Lu, Y. Liu, K. V. Agrawal, Synthesis of High-performance Polycrystalline Metal-Organic Framework Membranes at Room Temperature in a Few Minutes. *J. Mater. Chem. A*, **2020**, *accepted*.
7. J.-J. Chen, H.-C. Chiu, C.-W. Chang, C.-Y. Shen, Y.-H Kang, **H.-Y. Chi**, C.-K. Chang, Y.-C. Chuang, D.-Y. Kang, Core-shell Metal-Organic Frameworks with Improving Cyclic Stability for Water Adsorption. *J. Chem. Eng. Japan*, **2020**, *accepted*.
8. L.-W. Lee, **H.-Y. Chi**, Y.-C. Kao, T.-H. Hung, D.-S. Chiou, G.-H. Lee, S.-M. Peng, D.-Y. Kang, C.-M. Wang, K.-L. Lu, Zinc(II)–Organic Framework Films with Thermochromic and Solvatochromic Applications. *Chem. Eur. J.*, **2020**, 26, 1-6. [link]
9. C. H. Lam, W.-J. Hsu, **H.-Y. Chi**, Y.-H. Kang, J.-J. Chen, D.-Y. Kang, High-Throughput Fabrication of Zeolite Thin Films *via* Ultrasonic Nozzle Spray Deposition. *Microporous Mesoporous Mater.*, **2018**, 267, 171-180. [link]
10. K.-Y. Huang, **H.-Y. Chi**, P.-K. Kao, F.-H. Huang, Q.-M. Jian, I-C. Cheng, W.-Y. Lee, C.-C. Hsu, and D.-Y. Kang, Atmospheric Pressure Plasma Jet Assisted Synthesis of Zeolite-Based Low-k Thin Films, *ACS Appl. Mater. Interfaces*, **2018**, 10, 900-908. [link]
11. Y.-L. Li, **H.-Y. Chi**, M.-Y. Kan, S.-Y. Pao, Y.-H. Kang, J.-J. Chen, and D.-Y. Kang, Surface Engineering Layered Metal-Organic Framework to Enhance Processability and Stability in Water. *ChemNanoMat*, **2017**, 3, 902-908. [link]
12. C. H. Lam, A.-C. Yang, **H.-Y. Chi**, K.-Y. Chan, C.-C. Hsieh, and D.-Y. Kang, Microwave-Assisted Synthesis of Highly Monodispersed Single-Walled Alunminosilicate Nanotubes. *Chemistryselect*, **2016**, 1(19), 6212-6216. [link]
13. A.-C. Yang, Y.-S. Li, C. H. Lam, **H.-Y. Chi**, I-C. Cheng, and D.-Y. Kang, Solution-Processed Ultra-Low-K Thin Films Comprising Single-Walled Aluminosilicate Nanotubes. *Nanoscale*, **2016**, 8, 17427-17432. [link]

AWARDS AND HONORS

Award for Excellent Poster Presentation 2016.11
63rd TwICHE (authorized by Taiwan Institute of Chemical Engineers**)**

Award for Excellent Oral Presentation 2016.06
2016 Interface Science Conference (authorized by Taiwanese Interface Society)

Ministry of Science and Technology Undergraduate Research Fellowship 2015.07-2016.02
Fellowship for Undergraduate Research Proposal

Academic Achievement Award *(The Top 5 %)* **6 times** during
National Chiao Tung University (Department of Applied Chemistry) 2013.02-2016.01

Mr. Hsu Cheng Chi Memorial Scholarship 2015.12
Scholarship for Best-all-round Students
(Only 3 awardees out of 200 students in the Department of Applied Chemistry)

TASCO Chemical Corporation Scholarship 2014.12
Scholarship for Outstanding Students major in Chemistry
(Only 2 awardees out of 200 students in the Department of Applied Chemistry)

RESEARCH EXPERIENCE

KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY (KAUST) Thuwal, Saudi Arabia
M.S. Student, Inorganic Membrane Laboratory, Advisor: Prof. Zhiping Lai 2018.08-2019.12

Electrochemical Deposition of Metal-Organic Framework (MOF) Membranes for Olefin/Paraffin Separations

- Design and synthesize MOF membranes by cathodically electrochemical deposition in aqueous phase.
- Operate olefin/paraffin separation test for defect-free membranes.

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE (EPFL) Sion, Switzerland
Intern, Laboratory of Advanced Separations (LAS), Advisor: Prof. Kumar Varoon Agrawal 2019.07-2019.08

Electrophoretic Nuclei for High-Performance Metal-Organic Framework (MOF) Membranes

- Developed a generic approach to synthesize crystalline MOF membranes using electrophoretic nuclei deposition.
- Performed gas separation test on MOF membranes and structural deformation effect on separation.

NATIONAL TAIWAN UNIVERSITY (NTU) Taipei, Taiwan
Research Assistant, Multifunctional Materials Laboratory, Advisor: Prof. Dun-Yen Kang 2016.07-2018.07

Direct Deposition of Zeolitic Imidazolate Framework (ZIF) Membranes for Adsorption of Dye Molecules

- Directly deposited ZIF membranes from stabilized suspension by surfactant-assisted synthesis.
- Effectively adsorbed Rose Bengal dye molecules in the aqueous phase.

Switchable Solvochromic Behavior of 3D Pillar-Layer Metal Organic Framework (MOF)
Collaboration with the Institute of Chemistry, Academia Sinica, Prof. Kuang-Lieh Lu

- Developed a novel synthesis method for producing dense MOF membranes with obvious luminescence change.
- Characterized the color and morphology transformation of MOF crystals under *in-situ* imaging.

Surfactant-Mediated Self-Assembly of Nanocrystals to Form Hierarchically Structured Zeolite Thin Films
Collaboration with the Graduate Institute of Photonics and Optoelectronics, Prof. I-Chun Cheng

- Investigated the mechanism of hierarchically structured formation under *in-situ* imaging.
- Examined the relation between effect of surfactant and optical and electrical properties.

INDUSTRIAL TECHNOLOGY RESEARCH INSTITUTE (ITRI) Hsinchu, Taiwan
Intern, Material and Chemical Research Laboratories (MCR) 2015.08-2016.06

Reinforced Thermoplastic Materials for Application of 3D Printing

- Investigated phase transformation of the polymer blend.
- Evaluated operated parameters of 3D printing utilizing the filament of self-made polymer blend.

NATIONAL CHIAO TUNG UNIVERSITY (NCTU) Hsinchu, Taiwan
Undergraduate Student, Optoelectronic Polymer Research Group, Advisor: Prof. Jiun-Tai Chen 2014.07-2016.06

Breaking Embedded Electrospun Fibers to Fabricate Polymer Spheres Encapsulated in Polymer Films

- Investigated Plateau-Rayleigh Instability-liked transformation of electrospun fibers under *in-situ* observation.
- Fabricated individual polymer spheres with regular spacing and sizes.