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Academic Qualification

Ph.D. in Chemistry, Nanyang Technological University
B.S. in Chemistry, Nankai University

Teaching Area

Research Area

Electrocatalysis
Operando study
Radioactive waste capture and sensing

Working Experience

2017-2021, Postdoctoral Fellow, King Abdullah University of Science and Technology, Saudi Arabia
2021-2022, Research Scientist, King Abdullah University of Science and Technology, Saudi Arabia
2022-2023, Research Fellow, The Hong Kong Polytechnic University, Hong Kong, China
2023-present, Assistant Professor, Department of Materials Science and Engineering, Macau University of Science and Technology, Macau, China

Academic Publication

Q. Lei, L. Huang, J. Yin, B. Davaasuren, Y. Yuan, X. Dong, Z. Wu, X. Wang, K. Yao, X. Lu, Y. Han, Structural evolution and strain generation of derived-Cu catalysts during CO2 electroreduction, **Nat. Commun.**, 2022, 13, 4857.

Q. Lei, H. Zhu, K. Song, N. Wei, L. Liu, D. Zhang, J. Yin, X. Dong, K. Yao, N. Wang, X. Li, B. Davaasuren, J. Wang, Y. Han, Investigating the Origin of Enhanced C2+ Selectivity in Oxide-/Hydroxide-derived Copper Electrodes during CO2 Electroreduction, **J. Am. Chem. Soc.**, 2020,

J. Li, **Q. Lei**, X. Dong, C. Chen, X. Liu, Z. Zhang, F. Shui, M. Yi, B. Li, X-H Bu, Sequential Modification Strategy to Construct Crystalline Benzimidazole Covalent Organic Frameworks with Extraordinary Stability and Polymerization Degree, **Chem. Mater.**, 2023, 35, 11, 4120.

F. Shui, **Q. Lei**, X. Dong, T. Pan, Z., J. Li, M. Yi, L. Zhang, X. Liu, Z. You, S. Yang, R. Yang, H. Zhang, J. Li, Z. Shi, J. Yin, B. Li, X.-H. Bu, Iodine nanotrap for highly efficient iodine capture under high temperature, **Chem. Eng. J.**, 2023, 468, 143525.

H. Zhang, Y. Wang, **Q. Lei**, Y. Wang, C. Tang, J. Yin, T.W.B. Lo, Optimizing Cu+-Cu0 synergy by operando tracking of Cu2O nanocatalysts during the electrochemical CO2 reduction reaction, **Nano Energy**, under revision.

H. Zhang, Z. Zhou, **Q. Lei**, T.W.B. Lo, Recent advances in the operando structural and interface characterisation of electrocatalysts, **Curr. Opin. Electrochem.**, 2023, 38, 101215.

Y. Xie, T. Pan, **Q. Lei**, C. Chen, X. Dong, Y. Yuan, W. A. Maksoud, L. Zhao, L. Cavallo, I. Pinnau, Y. Han, Efficient and Simultaneous Capture of Iodine and Methyl Iodide Achieved by a Covalent Organic Framework, **Nat. Commun.**, 2022, 13, 2878.

Z. Zhang, X. Dong, J. Yin, Z. Li, X. Li, D. Zhang, T. Pan, **Q. Lei**, X. Liu, Y. Xie, F. Shui, J. Li, M. Yi, J. Yuan, Z. You, L. Zhang, J. Chang, H. Zhang, W. Li, Q. Fang, B. Li, X.-H. Bu, Y. Han, Chemically Stable Guanidinium Covalent Organic Framework for Efficient Capture of Low-concentration Iodine at High Temperatures, **J. Am. Chem. Soc.**, 2022, 144, 6821-6829.

Y. He, **Q. Lei**, C. Li, Y. Han, Z. Shi, S. Feng, Defect Engineering of Photocatalysts for Solar-Driven Conversion of CO2 into Valuable Fuels, **Mater. Today**, 2021, 50, 358-384.

K. Yang,† T. Pan,† **Q. Lei,†** X. Dong, Q. Cheng, Y. Han, A roadmap to sorption-based atmospheric water harvesting: from molecular sorption mechanism to sorbent design and system optimization, **Environ. Sci. Technol.**, 2021, 55, 10, 6542-6560. (†equal contribution)

Y. Xie, T. Pan, **Q. Lei**, C. Chen, X. Dong, Y. Yuan, J. Shen, Y. Cai, C. Zhou, I. Pinnau, Y. Han, Ionic Functionalization of Multivariate Covalent Organic Frameworks to Achieve Exceptionally High Iodine Capture Capacity, **Angew. Chem. Int. Ed.**, 2021, 60, 22432-22440.

J. Yin,† **Q. Lei,†** Y. Han, O. M. Bakr, and O. F. Mohammed, Luminescent Copper(I) Halides for Optoelectronic Applications, **Phys. Status Solidi RRL**, 2021, 2100138. (†equal contribution)

W. Ogieglo, K. Song, C. Chen, **Q. Lei**, Y. Han, I. Pinnau, Nano-Confinement Effects on Structural Development and Organic SolventInduced Swelling of Ultra-Thin Carbon Molecular Sieve Films, **ACS Appl. Mater. Interfaces**, 2021, 13, 18, 21765-21774.

Q. Lei, S. Ba, H. Zhang, Y. Wei, Y. J. Lee, T. Li, Enrichment of omega-3 fatty acids in cod liver oil via alternate solvent winterization and enzymatic interesterification, **Food Chem.**, 2016, 199, 364-371.

Q. Lei and T. Li, Functional monoesters of jojoba oil can be produced by enzymatic interesterification: Reaction analysis and structural characterization, **Eur. J. Lipid Sci. Technol.**, 2015, 117, 630-636.

Q. Lei, W. L. Lee and T. Li, Design and synthesis of 1,3-dicapryloyl-2-acetylglycerol as molecular probe for TAG metabolism study, **Eur. J. Lipid Sci. Technol.**, 2013, 115, 232–238.

S. Ba, **Q. Lei**, C. W. Ng, H. Zhang, D. Huang and T. Li, Synthesis of new types of brominated diesters as potential food emulsifiers, **J. Chem. Sci.**, 2014, 1, 40-47.

J. Yin, M. Kumar, **Q. Lei**, L. Ma, S. S. K. Raavi, G. G. Gurzadyan, C. Soci, Small-size effects on electron transfer in P3HT/InP quantum dots, **J. Phys. Chem. C**, 2015, 119, 26783-26792.

Professional Certification and Awards

Higher Education Teaching Certificate, 2022