

YANNA LIU

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Education

Ph.D. Environmental Engineering, Sep. 2018-Apr.2023

University of Calgary, Schulich School of Engineering, Department of Mechanical and Manufacturing Engineering, Calgary, Canada

Ph.D. Chemical Technology, Sep. 2004- Apr. 2010

Dalian University of Technology, School of Chemical Engineering, Dalian, P.R. China.

BEng Applied Chemistry, Sep. 2000-July. 2004

Shandong Polytechnic University, Department of Chemical Engineering, Jinan, P.R. China

Work Experience

Postdoctoral Fellow (2024.1-present) University of Calgary, Schulich School of Engineering, Department of Chemical & Petroleum Engineering, Canada

- Ammonia synthesis with NTP
- CH₄ liquefaction with NTP

Research Assistant (2023.5-2023.12) University of Calgary, Schulich School of Engineering, Department of Mechanical and Manufacturing Engineering, Canada

- Develop air quality detection module

Associate professor (2014.10-2017.3), Assistant professor (2010-2014.10) Kunming University of Science and Technology, Kunming, P.R. China

- Prepare and characterize the adsorbent of separation CH₄, H₂, and CO₂, including carbon, zeolites A and SAPO-34, and core-shell materials.
- Discuss the effect of different preparation parameters on the final porosity of materials.
- Investigate the mechanism of different adsorption.
- Teach Introduction to Chemical Engineering in New Energy to undergraduate students.
- Teach New Energy Materials to graduate students.
- Direct National Natural Science Foundation of China (No.21301079) (2014.1-2016.12)
- Direct Applied Basic Research Programs of Science and Technology Commission Foundation of Yunnan Province (No.2010CD026) (2010.5-2013.5)

Postdoctoral researcher (2014.1-2015.03) National Central University, Taiwan

- Explore the spreading dynamics of a droplet on the stainless-steel surface with an ultralow applied voltage.
- Examine the effects of the electric field and drop size on the spreading dynamics.
- Develop a simple model to interpret the mechanism of ultralow electrowetting.
- Support my supervisor in supervising postgraduates, including teaching some relevant knowledge and providing my professional experiences.

Skills and Abilities

- Proficient with laboratory work with 10 years of laboratory work.
- Experience with the preparation of academic reports for seminars.
- 7 years experience in teaching.
- Establish, review, and update the research plan adhering to the supervisor's project requirements.
- Professional computer literacy skills and proven problem-solving skills.
- Managing and supervising a team of other researchers.
- Hands-on experience synthesizing various nanoscale materials, including metallic-based, ordered porous, single-atom materials.
- Expertise in characterization techniques, including XRD, SEM, TEM, EDS, XPS, TGA/DTG, and G.C.
- Confidence in English skills (written & verbal communication) to interact with a broad spectrum of scientists.

Publications

1. **Yanna Liu**, Shijun Meng, Song Xiao, Hua Song*, Ke Du*, Defects-enriched two-dimensional ultrathin g-C₃N₄/In₂O₃ nanoparticles for effective NO₂ detection at room temperature, *Sensors and Actuators B: Chemical*, 2023;396:134558.
2. Li S, **Liu YN**, Du K*. Quantifying Emissions from Fugitive Area Sources Using a Hybrid Method of Multi-Path Optical Remote Sensing and Tomographic Inverse-Dispersion Techniques. *Remote Sensing*. 2023;15(4):1043.
3. **Liu YN**, Li S, Xiao S, Du K*. In₂O₃ microtubes decorated with Ag nanoparticles for NO₂ gas detection at room temperature. *Vacuum*. 2022;202:111197.
4. **Liu Y**, Li S, Xiao S, Du K*. Down to ppb level NO₂ detection by vertically MoS₂ nanoflakes grown on In₂O₃ microtubes at room temperature. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*. 2022;648:129435.
5. **Liu YN**, Xiao S, Du K*. Chemiresistive Gas Sensors Based on Hollow Heterojunction: A

Review. *Advanced Materials Interfaces*. 2021;8(12):2002122.

6. Song X, Xiaoyu C, Lin Q, **Yanna L***. A review of mineral carbonation from industrial waste. *IOP Conference Series: Earth and Environmental Science*; 2019: IOP Publishing.
7. Xiao WC, Zhang B, Xu H, Xiao S, **Liu YN***. Influence of dual template on the synthesis of size controllable zeolite SAPO-34. *Proceedings of the 2016 International Conference on Civil, Transportation and Environment*. 2016;78:1043-6.
8. **Liu YN**, Xiao WC, Zhang B, Xu H, Xiao S*. Influence of CTAB on the Synthesis of Size Controllable Zeolite SAPO-34. *2016 International Conference on Materials Science and Engineering Application (Icmsea 2016)*. 2016:249-53.
9. **Liu YN**, Xiao WC, Xiao S*. Influence of phosphorous contents on Si incorporation mechanism and properties of SAPO-34. *Advanced Powder Technology*. 2016;27(2):625-30.
10. **Liu Y**, Liang YE, Sheng YJ, Tsao HK*. Ultralow voltage irreversible electrowetting dynamics of an aqueous drop on a stainless steel surface. *Langmuir*. 2015;31(13):3840-6.
11. **Liu Y**, Xiao S, Bai P, Hu H, Jin L. Adsorption separation performance of H₂/CH₄ on ETS-4 by concentration pulse chromatography. *Journal of energy chemistry*. 2014;23(2):213-20.
12. **LIU Y**, BAI P, LONG L, JIAN P, XIAO S, SUN Y. Synthesis of Submicron Zeolite A Without Organic Template. *Journal of The Chinese Ceramic Society*. 2014;42(10):1325-31.
13. Bai P, **Liu YN***, Xiao S, Long L, Sun YL. Synthesis of zeolite A nanocrystals by controlling the polymeric state of silicate precursors. *Materials Letters*. 2014;124:120-2.
14. **Liu YN**, Zhang ZS, Xia JP. Removal of Iron in nickel precipitation residue wastewater with magnesium oxide. *Advanced Materials Research*; 2013: Trans Tech Publ.
15. Bai P, **Liu YN***, Zhang ZS, Sun YL. Effect of Different Silica Source on NaA Nanocrystal. *Applied Mechanics and Materials*; 2013: Trans Tech Publ.
16. **Liu YN**, Xu JY, Jin LJ, Fang YM, Hu HQ*. Synthesis and modification of zeolite NaA adsorbents for separation of hydrogen and methane. *Asia-Pacific Journal of Chemical Engineering*. 2009;4(5):666-71.

Patent

1. **Yanna Liu**, Pu Bai, Yanlin Sun, Wenbo Zhao, Yanhong Li, Li Long, Huajun Li. A rapid preparation method for nano zeolite A, (2013), CN103435062A, **Approved**.
2. **Yanna Liu**, Pu Bai, Yanlin Sun, Wenbo Zhao, Yanhong Li, Li Long, Huajun Li. A preparation method of amorphous SiO₂/zeolite A nanocomposite powder, (2013), CN103435063A, **Approved**.
3. **Yanna Liu**, Song Xiao. A two-step hydrothermal synthesis method of ultrafine zeolite A without a template, CN103848436A, (2015), **Approved**
4. **Yanna Liu**, Song Xiao, Daikui Long, Xiaoning Tang, Linhua Zhu, Yanlin Sun, A preparation method of hierarchical zeolite A, (2014), CN104276583A, **Approved**.
5. **Yanna Liu**, Song Xiao, Daikui Long, Xiaoning Tang, Yanlin Sun, Linhua Zhu, A preparation

- method of submicron zeolite A, (2014), CN104276584A, **Approved.**
6. **Yanna Liu**, Wencan Xiao, Song Xiao, A dryer, (2016), CN205980603U, **Approved.**
 7. **Yanna Liu**, Song Xiao, Peng Dong, Daikui Long, A method of preparing nano SAPO-34, (2015), CN104973609A, **Approved.**
 8. **Yanna Liu**, Li Long, Song Xiao, Chao Qian, A micro-reaction device, (2013), CN203508022U, **Approved.**
 9. Wenbo Zhao, Xianye Qin, **Yanna Liu**, Yanhong Li, Yanlin Sun. Method and application of a diphenyl carbonate synthesis catalyst, (2013), CN103464208A, **Approved.**
 10. Zhaoshu Zhang, Junpei Xia, **Yanna Liu**, Jinbo Wang, A method for treating wastewater and utilizing residue of acid-hydrolyzed laterite nickel ore, (2013), CN103112963A, **Approved.**
 11. Yanlin Sun, Hong Wang, **Yanna Liu**, Wenbo Zhao, Yunlin Zhao, High efficient polycarboxylic acid superplasticizer with adjustable main chain carboxyl group density, (2014), CN102584093B, **Approved.**
 12. Song Xiao, Ziao Li, Xiaoyu Chen, Yanna Liu, A device and method of a household solar energy baking product, (2016), CN106524530A, **Approved.**
 13. Wenbo Zhao, Bing Han, Yanhong Liu, **Yanna Liu**, Yadlin Sun, Xianye Qin, A preparation method and application for heterogeneous phase catalyst, (2012), CN102989525A, **Approved.**
 14. Song Xiao, Yang Li, **Yanna Liu**, A device and method of waste heat recovery from blast-furnace slag in iron and steel enterprise, (2016), CN106086257A, **Approved.**
 15. Song Xiao, Yifan Liang, Xiaoyu Chen, **Yanna Liu**, A method for recovering organic waste biological energy, (2017), CN106566846A, **Approved.**