Stanford

Haiyan Mao

Physical Science Research Scientist, T. H. Geballe Laboratory for Advanced Materials

Bio

ACADEMIC APPOINTMENTS

- Physical Science Research Scientist, T. H. Geballe Laboratory for Advanced Materials

Publications

PUBLICATIONS

- **High-Entropy Second Solvation Shell by Anion Diversity for Aqueous Zinc-Ion Electrolytes** *ACS ENERGY LETTERS*
  Su, H., Hinks, E., Chen, Y., Kim, S., Li, Y., Chi, X., Zhang, P., Wang, J., Choi, I., Mao, H., Huang, I., Xu, X., Chen, et al
  2026
- **Scalable Carbon Dioxide Capture Using Clay-Derived Zeolites via Atomic Rearrangement.** *Journal of the American Chemical Society*
  Li, J., Li, J., Fang, S., Lyu, H., Yuan, L., Guan, X., Feng, G., Chi, X., Mao, H., Wu, Y., Li, Y., Liu, Z., Zhang, et al
  2026
- **Mesh-like structure integrated core-shell-shell nanocomposites for enhanced stability and performance in carbon capture.** *Nature communications*
  Yang, S., Mao, H., Dun, C., Liu, J., Hou, K., Cai, A., Wang, J., Lee, J. K., Li, D., Lyu, H., Chen, Z., Lv, X., Zhuang, et al
  2025; 16 (1): 10526
- **Strain release through hydrogen bond-mediated layer twisting.** *Science advances*
  Zheng, Q., Li, B., Liu, S., Cao, C., Rimsza, J. M., Zhang, Q., Bai, J., Chang, C., Wang, J., Liang, C., Mao, H., Carbone, M. R., Lu, et al
  2025; 11 (44): eady6869
- **Multistep Growth Pathway of Covalent Organic Framework Onion Nanostructures.** *Journal of the American Chemical Society*
  Zheng, Q., Ren, A., Zagalskaya, A., Mao, H., Lee, D., Yang, C., Bustillo, K. C., Wan, L. F., Pham, T. A., Reimer, J. A., Zhang, J., Liu, Y., Zheng, et al
  2024
- **Sulfur and Wavy-Stacking Boosted Superior Lithium Storage in 2D Covalent Organic Frameworks.** *Small (Weinheim an der Bergstrasse, Germany)*
  Li, N., Zhu, J., Yang, C., Huang, S., Jiang, K., Zheng, Q., Yang, Y., Mao, H., Han, S., Zhu, L., Zhuang, X.
  2024: e2405974
- **Multivariate Machine Learning Models of Nanoscale Porosity from Ultrafast NMR Relaxometry.** *Angewandte Chemie (International ed. in English)*
  Fricke, S. N., Salgado, M., Menezes, T., Costa Santos, K. M., Gallagher, N., Song, A. Y., Wang, J., Engler, K., Wang, Y., Mao, H., Reimer, J. A.
  2024: e202316664
- **Unveiling the complexity of nanodiamond structures.** *Proceedings of the National Academy of Sciences of the United States of America*
  Zheng, Q., Shi, X., Jiang, J., Mao, H., Montes, N., Kateris, N., Reimer, J. A., Wang, H., Zheng, H.
  2023; 120 (23): e2301981120

- **A scalable solid-state nanoporous network with atomic-level interaction design for carbon dioxide capture.** *Science advances*
  Mao, H., Tang, J., Day, G. S., Peng, Y., Wang, H., Xiao, X., Yang, Y., Jiang, Y., Chen, S., Halat, D. M., Lund, A., Lv, X., Zhang, et al
  2022; 8 (31): eabo6849
- **Origin of enhanced water oxidation activity in an iridium single atom anchored on NiFe oxyhydroxide catalyst.** *Proceedings of the National Academy of Sciences of the United States of America*
  Zheng, X., Tang, J., Gallo, A., Garrido Torres, J. A., Yu, X., Athanitis, C. J., Been, E. M., Ercius, P., Mao, H., Fakra, S. C., Song, C., Davis, R. C., Reimer, et al
  2021; 118 (36)
- **Origin of enhanced water oxidation activity in an iridium single atom anchored on NiFe oxyhydroxide catalyst** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Zheng, X., Tang, J., Gallo, A., Torres, J., Yu, X., Athanitis, C. J., Been, E., Ercius, P., Mao, H., Fakra, S. C., Song, C., Davis, R. C., Reimer, et al
  2021; 118 (36)
- **Revealing Molecular Mechanisms in Hierarchical Nanoporous Carbon via Nuclear Magnetic Resonance** *MATTER*
  Mao, H., Tang, J., Xu, J., Peng, Y., Chen, J., Wu, B., Jiang, Y., Hou, K., Chen, S., Wang, J., Lee, H., Halat, D. M., Zhang, et al
  2020; 3 (6): 2093–2107
- **Dynamic Covalent Synthesis of Crystalline Porous Graphitic Frameworks** *CHEM*
  Li, X., Wang, H., Chen, H., Zheng, Q., Zhang, Q., Mao, H., Liu, Y., Cai, S., Sun, B., Dun, C., Gordon, M. P., Zheng, H., Reimer, et al
  2020; 6 (4): 933–44
- **Designing hierarchical nanoporous membranes for highly efficient gas adsorption and storage.** *Science advances*
  Mao, H. n., Tang, J. n., Chen, J. n., Wan, J. n., Hou, K. n., Peng, Y. n., Halat, D. M., Xiao, L. n., Zhang, R. n., Lv, X. n., Yang, A. n., Cui, Y. n., Reimer, et al
  2020; 6 (41)