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LINKS

- Website: www.hannah-e-holmes.com

Publications

PUBLICATIONS

- **Process systems engineering: a key enabler of-based direct air** *CURRENT OPINION IN CHEMICAL ENGINEERING*
Holmes, H. E., Kim, J., Realf, M.
2026; 51
- **Electrochemical reactive separations enable electrified nitrogen manufacturing and remediation** *CURRENT OPINION IN ELECTROCHEMISTRY*
Holmes, H. E., Guo, J., Miller, D. M., Tarpeh, W. A.
2025; 54
- **Two keys to scalable direct air capture: water management and contactor productivity** *CURRENT OPINION IN CHEMICAL ENGINEERING*
Kim, S., Holmes, H. E., Realf, M. J., Jones, C. W., Lively, R. P.
2025; 50
- **Probing the Mechanism of Selective Phosphate Adsorption from Wastewater Using Aqueous and Synchrotron X-ray Characterization.** *Journal of the American Chemical Society*
Sharma, N., Apraku, E., Holmes, H. E., Gong, M., Bustamante, D., Martinez, A. N., Weker, J. N., Bone, S., Tarpeh, W. A.
2025
- **Navigating the obstacles of carbon-negative technologies** *ONE EARTH*
Lamers, P., Nawaz, S., Sugiyama, M., Fiorini, A., Yu, Z., Holmes, H., Gadikota, G., Breyer, C., Macintosh, A., Butler, D., Ansell, D., Waschka, M., Evans, et al
2024; 7 (9): 1471-1476
- **Tuning sorbent properties to reduce the cost of direct air capture** *ENERGY & ENVIRONMENTAL SCIENCE*
Holmes, H. E., Banerjee, S., Wallace, A., Lively, R. P., Jones, C. W., Realf, M. J.
2024
- **Guanidine-Functionalized PIM-1 as a High-Capacity Polymeric Sorbent for CO₂ Capture** *CHEMISTRY OF MATERIALS*
Roy, A., Holmes, H. E., Baugh, L., Calabro, D. C., Leisen, J., Seth, S., Ren, Y., Weston, S. C., Lively, R. P., Finn, M. G.
2024
- **Cold Temperature Direct Air CO₂ Capture with Amine-Loaded Metal-Organic Framework Monoliths.** *ACS applied materials & interfaces*

Wang, Y., Rim, G., Song, M., Holmes, H. E., Jones, C. W., Lively, R. P.

2024; 16 (1): 1404-1415

- **Water management and heat integration in direct air capture systems** *Nature Chemical Engineering*
Holmes, H. E., Realff, M. J., Lively, R. P.
2024; 1: 208-215
- **Evaluating degradation of CO₂ adsorbents in flue gas from bioenergy with carbon capture and storage** *SUSTAINABLE ENERGY & FUELS*
Holmes, H. E., Schreck, R. D., Narayanan, P., Ghosh, S., Sun, W., Realff, M. J., Lively, R. P.
2023; 7 (18): 4602-4607
- **Scalable Formation of Diamine-Appended Metal-Organic Framework Hollow Fiber Sorbents for Postcombustion CO₂ Capture.** *JACS Au*
Quan, W., Holmes, H. E., Zhang, F., Hamlett, B. L., Finn, M. G., Abney, C. W., Kapelewski, M. T., Weston, S. C., Lively, R. P., Koros, W. J.
2022; 2 (6): 1350-1358
- **Defining Targets for Adsorbent Material Performance to Enable Viable BECCS Processes.** *JACS Au*
Holmes, H. E., Lively, R. P., Realff, M. J.
2021; 1 (6): 795-806
- **Potential Dependence of the Local pH in a CO₂ Reduction Electrolyzer** *ACS CATALYSIS*
Henckel, D. A., Counihan, M. J., Holmes, H. E., Chen, X., Nwabara, U. O., Verma, S., Rodriguez-Lopez, J., Kenis, P. J. A., Gewirth, A. A.
2021; 11 (1): 255-263