

## TITLE

# A Method of Post-synthetic Modification of Metal-organic Frameworks for Enhancing Hydrophilicity and Water Stability of Metal-organic Frameworks in Water Sorption

**CASE NUMBER**  
**C17030**

## VALUE PROPOSITION

- » The technology increases efficiency of the fabrication process, and provides enhanced application in water-sorption, adsorptive heat transformation, and atmospheric water harvesting.

## UNMET NEED

- » Practical usability of metal-organic frameworks is still limited by high fabrication costs, poor selectivity, low capacity, and difficulty in recycling/regeneration.
- » Fabrication processes have low throughput and higher throughput processes are experimental.
- » There is a need for innovation in the efficiency, stability, and functionality of MOFs to increase their translational viability.

## TECHNICAL OVERVIEW

- » Inventors at Johns Hopkins and the Applied Physics Laboratory have reported a method for a post-synthetic modification of metal-organic framework materials using molecules containing sulfonic acid group and sulfonate group.
- » Its single step process is novel from existing two-step processes which require initial reaction with hydrochloric acid before reaction with a molecule containing a sulfonate group in the final step.
- » This method also leads to simultaneous enhancement of hydrophilicity and water stability of metal-organic frameworks.

## STAGE OF DEVELOPMENT

- » Conceptual stage. However, experimental data is available.

## ASSOCIATED INVENTORS

*Chemical and Biomolecular Engineering*  
*Whiting School of Engineering*  
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## TECHNOLOGY CLASSIFICATION

- » Energy
- » Engineering

## CONTACT INFORMATION

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## ASSOCIATED REPORTS OF INVENTION (ROIs) AND INTELLECTUAL PROPERTY (IP) FILING NUMBERS

ROI#	TITLE	STATUS	PRIORITY DATE	IP FILING NUMBERS
C17030	A Method of Post-synthetic Modification of Metal-organic Frameworks for Enhancing Hydrophilicity and Water Stability of Metal-organic Frameworks in Water Sorption	Pending	11/15/2021	US Appl. No. 18/054,956