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# THIAZOLE-BASED COVALENT ORGANIC FRAMEWORKS FOR LOW-HUMIDITY WATER ADSORPTION

Tech ID: 34312 / UC Case 2026-050-0

## PATENT STATUS

Patent Pending

## BRIEF DESCRIPTION

The critical challenge of providing clean, potable water in arid and semi-arid regions can be addressed by technologies that efficiently harvest atmospheric water, particularly under low-humidity conditions. UC Berkeley researchers have developed novel thiazole-based Covalent Organic Frameworks (COFs) that serve as highly efficient sorbents for this purpose. These COFs are crystalline, porous materials characterized by high porosity, permanent pore structures, and a chemically tunable nature. The disclosed COFs demonstrate a significant advantage over alternatives by exhibiting a low-humidity water uptake onset, coupled with fast adsorption kinetics, a high water working capacity, and excellent cycling stability. Furthermore, the development includes scalable synthetic methods, such as microwave-assisted and reflux routes, which enable gram-level, practical production.

## SUGGESTED USES

- » Potable water generation
- » Atmospheric water harvesting
- » Adsorption-driven heat exchangers
- » Heat pumps
- » Autonomous indoor humidity regulation
- » Sustainable water supply systems
- » Adsorption and separation

## ADVANTAGES

- » Low humidity water uptake onset (efficient in drier air)
- » Fast adsorption kinetics

## CONTACT

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## INVENTORS

» Yaghi, Omar M.

## OTHER INFORMATION

### CATEGORIZED AS

- » Environment
- » Other
- » Materials & Chemicals
- » Chemicals
- » Other
- » Nanotechnology
- » Materials
- » Other
- » Engineering
- » Other

### RELATED CASES

2026-050-0

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High water working capacity

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Excellent cycling stability (durable for repeated use)

»

Scalable synthetic methods (microwave-assisted and reflux routes) enabling gram-level production

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High porosity and permanent pore structures

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Tunable chemistry

## RELATED MATERIALS

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### ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Coordinative Alignment Of Molecules In Chiral Metal Organic Frameworks](#)
- ▶ [Exceptional Zeolitic Imidazolate Frameworks And A General Strategy To Make More](#)
- ▶ [Hydroxamate-Based Metal-Organic Frameworks](#)
- ▶ [Mof Heterolites: Mesoscopic Heterogeneity Within Order With Porous Nanocrystals](#)
- ▶ [PFAS Removal from Water Through Fluorinated Cationic Reticular Materials](#)
- ▶ [Coumarin-Linked Covalent Organic Frameworks](#)



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