

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

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Potable water generation

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Atmospheric water harvesting

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Adsorption-driven heat exchangers

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Heat pumps

»

Autonomous indoor humidity regulation

»

Sustainable water supply systems

»

Adsorption and separation

ADVANTAGES

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Low humidity water uptake onset (efficient in drier air)

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Fast adsorption kinetics

CONTACT

Laleh Shayesteh
lalehs@berkeley.edu
tel: 510-642-4537.



INVENTORS

» Yaghi, Omar M.

OTHER INFORMATION

CATEGORIZED AS

» **Environment**

» Other

» **Materials & Chemicals**

» Chemicals

» Other

» **Nanotechnology**

» Materials

» Other

» **Engineering**

» Other

RELATED CASES

2026-050-0

»

High water working capacity

»

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

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](#)



University of California, Berkeley Office of Technology Licensing

2150 Shattuck Avenue, Suite 510, Berkeley, CA 94704

Tel: 510.643.7201 | Fax: 510.642.4566

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