



Superabsorbent, Sustainable Aerogels

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WARF: P140038US02

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing organic aerogels that can absorb extreme amounts of oil, organic solvents and heavy metals.

OVERVIEW

Aerogels are the world's lightest solid materials made by removing liquid from gels. Such materials may contain up to 99 percent air and have special properties like high porosity and absorption.

One promising application for aerogels is environmental cleanup. They could be used to purify water contaminated with crude oil, fuel, organic solvents and metals like lead and mercury.

THE INVENTION

UW-Madison researchers have developed organic aerogels with excellent absorbent properties. They are made by combining a water soluble polymer and cellulose nanocrystals/nanofibers (CNFs) derived from biomass. The polymer, such as PVA (polyvinyl alcohol), is cross-linked to form a gel and then water is removed by freeze-drying. The surface of the aerogel is coated with an organosilane, making it highly water repellent and superoleophilic ('oil loving').

APPLICATIONS

- Water purification
- Oil spills and industrial cleanup
- Heavy metal ion scavenging

KEY BENEFITS

- Highly porous, lightweight and sustainable
- Absorbs huge amount of oil and organic solvent (up to 100 times its own weight)

THE WARF ADVANTAGE

Since its founding in 1925 as the patenting and licensing organization for the University of Wisconsin-Madison, WARF has been working with business and industry to transform university research into products that benefit society. WARF intellectual property managers and licensing staff members are leaders in the field of university-based technology transfer. They are familiar with the intricacies of patenting, have worked with researchers in relevant disciplines, understand industries and markets, and have negotiated innovative licensing strategies to meet the individual needs of business clients.



- High compressive strength and ultralow density
- CNFs are derived from biomass.
- PVA is a cheap synthetic polymer with excellent biocompatibility.
- Freeze-drying is a green, inexpensive and scalable process.

STAGE OF DEVELOPMENT

The development of this technology was supported by WARF Accelerator. WARF Accelerator selects WARF's most commercially promising technologies and provides expert assistance and funding to enable achievement of commercially significant milestones. WARF believes that these technologies are especially attractive opportunities for licensing.

ADDITIONAL INFORMATION

Related Portfolios

[WARF Accelerator Program Technologies](#)

Related Technologies

[WARF reference number P120283US03 describes sustainable organic aerogels for use in insulation.](#)

Publications

[View a news story about this technology](#)

Tech Fields

Materials & Chemicals - Absorbents

Materials & Chemicals - Nanocomposites

Clean Technology - Remediation & waste reduction

CONTACT INFORMATION

For current licensing status, please contact Mark Staudt at mstaudt@warf.org or 608-960-9845.