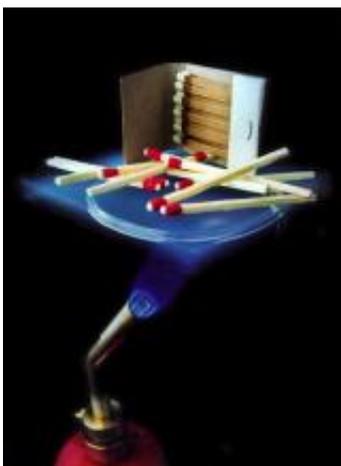


# 'Frozen smoke:' The ultimate sponge for cleaning up oil spills

February 16 2009

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Aerogels, a super-lightweight solid sometimes called "frozen smoke," may capture oil from wastewater and soak up environmental oil spills. Credit: Wikipedia Commons

Scientists in Arizona and New Jersey are reporting that aerogels, a super-lightweight solid sometimes called "frozen smoke," may serve as the ultimate sponge for capturing oil from wastewater and effectively soaking up environmental oil spills. Their study is in ACS' *Industrial & Engineering Chemistry Research*.

In the new study, Robert Pfeffer and colleagues point out that the environmental challenges of oil contamination go beyond widely publicized maritime oil spills like the Exxon Valdez incident. Experts

estimate that each year people dump more than 200 million gallons of used oil into sewers, streams, and backyards, resulting in polluted wastewater that is difficult to treat. Although there are many different sorbent materials for removing used oil, such as activated carbon, they are often costly and inefficient. Hydrophobic silica aerogels are highly porous and absorbent material, and seemed like an excellent oil sponge.

The scientists packed a batch of tiny aerogel beads into a vertical column and exposed them to flowing water containing soybean oil to simulate the filtration process at a wastewater treatment plant. They showed that the aerogel beads absorbed up to 7 times their weight and removed oil from the wastewater at high efficiency, better than many conventional sorbent materials.

More information: "Removal of Oil from Water by Inverse Fluidization of Aerogels", [pubs.acs.org/stoken/presspac/p.../10.1021/ie800022e](https://pubs.acs.org/stoken/presspac/p.../10.1021/ie800022e)

Provided by ACS

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