

Polymer-based filter successfully cleans water, recovers oil in Gulf of Mexico test

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In response to the massive oil leak in the Gulf of Mexico, a University of Pittsburgh engineering professor has developed a technique for separating oil from water via a cotton filter coated in a chemical polymer that blocks oil while allowing water to pass through. The researcher reports that the filter was successfully tested off the coast of Louisiana and shown to simultaneously clean water and preserve the oil.

Di Gao, an assistant professor and William Kepler Whiteford Faculty Fellow in the Department of Chemical and Petroleum Engineering in Pitt's Swanson School of Engineering, created his filter as a possible method to help manage the spreading [oil slick](#) that resulted from the April 20 explosion of BP's Deepwater Horizon [drilling platform](#). Gao has submitted his idea through the Deepwater Horizon Response Web site managed by the consortium of companies and government agencies overseeing the disaster response.

Gao's filter hinges on a polymer that is both hydrophilic—it bonds with the [hydrogen molecules](#) in water—and oleophobic, meaning that it repels oil. When the polymer is applied to an ordinary cotton filter, it allows water to pass through but not oil. The filter is produced by submerging the cotton in a liquid solution containing the polymer then drying it in an oven or in open air, Gao explained.

For the massive slick off the U.S. Gulf Coast, Gao envisions large, trough-shaped filters that could be dragged through the water to capture surface oil. The oil could be recovered and stored and the filter reused.

Current cleanup methods range from giant containment booms and absorbent skimmers to controlled fires and chemical dispersants with questionable effects on human health and the environment.

Provided by University of Pittsburgh

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