Clean Oil Spills Using Filamentous Carbon Particles

Create carbon filaments for environment-friendly oil spill cleanup

Crude oil and other petroleum-based products spilled in large bodies of water cause severe environmental damage. Oil is transferred by supertankers and underwater pipelines and kept in coastal storage facilities. All of these have the potential to accidentally release crude oil into the ocean. Due to the potential for extreme environmental danger, comprehensive and readily available methods are necessary to clean up the oil spill. Several methods exist for cleaning and removing oil from water, including: dispersants, skimmers, absorbent materials, and fire. Dispersants disperse oil to enhance evaporation and microbial activity, but are useless when oil spills are near coastal areas and can be toxic to coral and marine life. Booms and skimmers work well together but have trouble confining and cleaning large spills. Clean-up crews may set fire to the oil, but this produces toxic smoke which also damages the environment.

A research scientist at the University of Central Florida has created unique carbon filaments as a byproduct of a portable hydrogen generator technology that produces hydrogen from hydrocarbon feed stocks. These carbon filaments are tubular, approximately one micron in diameter, and possess large surface areas, which makes them ideal for absorbing and binding with crude oil. These carbon particles could be scattered across the water surface where a spill has occurred and after binding with the oil, the mixture is easily removed from the water's surface. Another technique using the carbon filaments described here is to deposit the carbon particles on an iron-alumina surface. When the oil binds to these heavier particles it sinks and remains under water until the oil is broken down by microbes. The carbon filament method is less harmful to wildlife and keeps the oil from contaminating nearby coastlines.

UCF Inventor
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Benefits
- Non-toxic carbon filaments bind to crude oil and enhance cleaning process
- Inexpensive natural byproduct of a portable hydrogen generator
- Environmentally friendly

Application
Remove oil from water surfaces in the ocean; for use by environmental clean-up and spill prevention organizations to create new products that contain and clean-up oil spills better.

US Issued Patents
6,653,005 | 7,473,466 | 7,691,271 | 7,914,683

If you or your company are interested in this opportunity, Contact:
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