

Scalable multifunctional ultra-thin graphite sponge

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Over the past decades, alarming consumption of earth's resources and subsequent environmental pollution has raised major concerns. Frequent oil spills and oil tanker incidents which resulted in catastrophic consequences for marine wild life and ecosystems are evident instances and whistleblowers. To prevent further damage to the environment, novel materials and methods for immediate decontamination and purification of water as well as sustaining the scarce natural resources are most favored. A graphite sponge material is developed with superporous and superhydrophobic properties. Moreover, sponge material is inexpensive and scalable. The fabricated sponge can be used to clean up different types of oil, organic solvents, toxic and corrosive contaminants. This versatile microstructure can retain its functionality even when pulverized. The sponge is applicable for targeted sorption and collection due to its ferromagnetic properties. We hope that such a cost-effective process can be embraced and implemented widely.