Functionalized GO macrostructures for high adsorption capacity of oils and organic solvent

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Pollution by oil spills or a toxic chemical leakage causes severe environmental and ecological problems. However, traditional absorbers made of natural porous materials, such as perlite, zeolite, wool fiber, sawdust, and activated carbon, has faced a limit to provide a solution to the water pollution due to their low adsorption capacitiy, slow adsorbing kinetics and poor selectivity. The macrostructure built by grapheme oxide (GO) assembly is an useful porous structure itself with a plenty of oxygenated groups on the surface to be functionalized through covalent or non-covalent ways, however, framed with a brittle skeleton. In this research, we modified the hydrophilic GO scaffold into the hydrophobic GO macrostructure by a conformal coating of hydrophobic functional group for high adsorption capacity of oils and organic solvents.