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Rapid and Destructive Adsorption of Paraoxon-ethyl Toxin via a Self-Detoxifying Hybrid Electrospun Nanofibrous Membrane

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Abstract

Hierarchical organic-inorganic nanocomposites derived from polyethersulfone (PES) nanofibrous membranes with a post-modification of dopamine (DA) and polyethylenimine (PEI), comprising a high content (33 wt%) of MgO nanoparticles of smaller dimensions (12.7±3.0 nm), were successively fabricated using electrospinning and DA/PEI self-polymerization methods. The obtained hybrid membranes have a rapid capture and great destructive capacity towards paraoxon-ethyl toxin degradation with a relatively short interaction time (up to 92% within 40 min) for effective environmental remediation.

Keywords

Electrician, MgO, Polyethersulfone, toxin degradation, nanocomposite

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