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Electrospun polystyrene (PS) nanofibers loaded with polyvinylchloride (PVC) particles for crude oil spill cleanup

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Electrospun Polystyrene (PS) nanofibers were prepared with various concentrations of polyvinylchloride (PVC) concentrations using DMF solvent. The electrospun nanofibers were characterized by Scanning Electron Microscopy (SEM), TGA, FTIR and PET surface area. Fibers with a size range of 500 nm-8 m in diameter and below 100 m2/g in surface area were prepared after a thorough electrospinning optimization process. The prepared fibers were tested for their oil absorption efficiency as a function of absorbent weight, time of absorption and initial concentration of the polymer solution prior its conversion to fibers. Results showed an initial sorption capacity of a range of 50-100 g/g with microfibers prepared from PS/PVC solutions. The surface area of the produced fibers varied based on fiber size distribution, which depends on variations in the electrospinning parameters and the percentage of the PVC particles. Results showed the importance of the high surface area and interconnectivity of the porosities within the PS/PVC microfibrous sorbent for the removal of the oil, making the micro- fibrous PS/PVC sorbents an excellent candidate for crude oil spill cleanup.

Biography

M Alazab Alnaqbi has completed his PhD from the American University at Washington DC, USA. He is a Faculty Member in the Chemistry Department, College of Science, United Arab Emirates. He has published more than 10 papers in reputed journals.

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