

A feasibility study for recycling biodegradable adsorbent in the oil spill clean-up from seawater

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ABSTRACT

In the present work, the efficiency of *Conocarpus* leaves to remove oil from seawater was estimated. *Conocarpus* leaves were characterized by Brunauer–Emmett–Teller, scanning electron microscopy, Fourier-transform infrared spectroscopy and contact angle. The sorption parameters (sorption time, pH, oil ratio, biomass dose, initial oil concentration and temperature were investigated. The change in the pH of the oil/seawater system does not influence the oil sorption. Maximum oil sorption percent reached 88% at 2 min, 0.35 g at room temperature. The kinetic studies show rapid sorption and the pseudo-second-order kinetic governed the oil sorption. The isotherm modeling displayed that the oil uptake was fitted by the Langmuir isotherm. The outcomes of this work indicated a good sorption capacity (1.76 g/g) of *Conocarpus* leaves. In addition, *Conocarpus* leaves can be recycled for 4 cycles until the performance decays under 40%.

Keywords: Oil spill; Conocarpus leaves; Sorption; Kinetic; Recycle

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