

## Mixed Natural Adsorbents and Oxides for Oil Remediation

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**Abstract :** The importance of the crude oil refining process is due to the demand for petroleum products such as gasoline, kerosene, asphalt, etc., which are used in daily activities and have a high impact on the global economy. In the processes of oil obtaining and refining, it is common to find problems such as spills on seabed and high energy consumption in processing. In order to quickly and efficiently attack these problems, the use of adsorbents has taken on great importance due to its ease of implementation, as well as the possibility of their regeneration to be reused. In this work, the use of two types of adsorbents is proposed: the first is a natural adsorbent such as aloe vera or nopal, which were lyophilized and hydrophobized to achieve a selectivity in oil adsorption in oil / water mixtures. The second is a mixed iron/nickel oxide, which is specially designed to adsorb the asphaltene in the heavy fractions of the oil; in addition, this type of adsorbents presents catalytic properties that manage to decompose the heavier fractions of the petroleum in light hydrocarbons, descending thus the energy required for the oil refining process.

**Keywords :** nanomaterials, oil spills, remediation, natural adsorbents, mixed oxides

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