

## عنوان مقاله:

Waste Engine Oil Remediation Using Low Cost Natural Clay Absorbent Material

## محل انتشار:

ماهنامه بین المللی مهندسی، دوره 33، شماره 2 (سال: 1399)

تعداد صفحات اصل مقاله: 8

## نویسندگان:

- I. Shigidi - *Chemical Engineering Department, College of Engineering, King Khalid University, Abha, Saudi Arabia*
- H. Osman - *Chemical Engineering Department, College of Engineering, King Khalid University, Abha, Saudi Arabia*
- M. Eldirderi - *Chemical Engineering Department, College of Engineering, King Khalid University, Abha, Saudi Arabia*
- M. Ilyas Khan - *Chemical Engineering Department, College of Engineering, King Khalid University, Abha, Saudi Arabia*

## خلاصه مقاله:

The aim of the current research is to examine the potential of locally available natural clay mineral to act as an effective absorbent for waste engine oil treatment. The clay mineral was collected from the southern region of Saudi Arabia and was used without any kind of surface modification. The clay mineral was characterized by X-ray diffraction (XRD), X-ray fluorescence (XPS) and Brauner-Emitt-Teller (BET) surface area analysis. XRD data showed the crystalline structure of the clay while chemical composition of the clay was determined by XRF analysis in which the main constituents were SiO<sub>2</sub> (51.77%), Al<sub>2</sub>O<sub>3</sub> and Fe<sub>2</sub>O<sub>3</sub> with 29.17% and 13.22% respectively. Other minor compounds were detected. BET surface area was found to be around 65 m<sup>2</sup>/g. Clay adsorbent amount (ranging from 5 – 20g) was added to 100 ml waste engine oil sample under different temperature conditions. Sample analysis obtained by UV-spectrophotometer indicates that the oil sample S10 which was conducted at 450°C with 5g clay showed the best correlation (the peaks and wavelength number) very close the virgin oil. Hence, suggesting these to be the optimum operating conditions.

## کلمات کلیدی:

waste engine oil, Natural Clay, Characterization, Adsorption, UV-Spectrophotometer

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1021663>

