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Evaluation study of different types of adsorbents in minimizing sulfur contents in diesel fuel

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Three types of adsorbents: Bentonite clay, silica gels, charcoal were selected to evaluate their behavior in minimizing sulfur contents in diesel fuel and to characterize the more efficient adsorbent. Native diesel fuel with sulfur contents of 0.8% was received in a temperature range between (250-320°C) from fractional distillation of crude oil obtained from field of Kirkuk/Iraq with sulfur contents of 2% was used in this work. Desulfurization was performed in a continuous circulation of 150 ml of diesel fuel through a glass column (2 cm i.d. x 25 cm length) containing 100 gm adsorbent by circulating pump. Adsorption for sulfur contents was investigated at different duration of times i.e., 2 hours, 4 hours and 6 hours. Bentonite exhibited the maximum desulphurization yield of 65% at 6 hours adsorption. Surface areas of all adsorbents were characterized by SEM and EDX analysis. The FT-IR study of the desulphurized diesel sample revealed that mostly high molecular weight thioles and thiophenic compounds were depleted during adsorption process.

Biography

Mohamad Gamil Abdalghani has completed his PhD from the Institute of Organic Chemistry with Petroleum Center, Bulgarian Academic for Science in Bulgaria, Sofia. He was the Director of Applied Chemistry department in the University of Technology. He has then occupied the Directory of General Science department in the College of Basic Education, University of Salahaddin and Directory of Laboratories and Imports at the same college. He has supervised many MSc and PhD students and works as the Director of Scientific Promotion Committee.

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