

Solvent Extraction of Jordanian Oil Shale, Kinetics and Thermodynamic study

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Jordan has enormous oil shale reserves spread over more than 24 near surface, and deep occurrences across most Jordanian districts. The reserves are more than 50 billion tons. Oil shale is anticipated to play a crucial role in minimizing the pressure of energy costs on the Jordanian economy. In this paper, solvent extraction of oil shale is performed on samples obtained from four localities across the country. First, different pure and mixed organic solvents are used to determine the most suitable solvent type. Second, extraction parameters such as extraction time, temperature, pressure and agitation are investigated using a home-made reactor. The relevant kinetic data required to analyze and design an extraction process especially in pilot and industrial scales are obtained. Finally, a detailed thermodynamic study was performed suggesting that processing of oil shale at elevated temperatures leads to better recovery. Modelling of the extraction process is also developed.