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Unconventional oil resources (oil shale) for production of hydrocarbons (petroleum like)

Energy plays an important role in the economic growth and development around the world. Though conventional oil resources like petroleum and natural gas are still the main sources of energy, the depletion of oil reserves and the continuing soaring oil price indicate that countries should turn to unconventional oil resources as reliable and secure energy sources. Oil shale represents one of the largest hydrocarbon resources in the world. Its utilization has received much attention all over the world due to the rise of oil-prices. The petroleum supply/cost factors create a need for alternative transportation fuels. Shale oil derived fuels are one of these alternatives, and perhaps should be viewed as the most attractive for several reasons: First, as our experience shows, shale oil is a superior source of feedstock for transportation fuels - our single largest domestic energy requirement. Utilizing the gas oil conversion flexibility found in most modern refineries, essentially all of the syncrude can be converted to transportation fuels. Jet fuels, diesel and gasoline can all be produced from syncrude, and by choosing the processing conditions, any product can be maximized. Second, the environmental challenges posed by oil shale development are manageable. Also, oil shale have some potential for the production of several synthetic products such as cement, calcium, alumina, pitches, the carbon adsorbents, zeolites, carbon fibres and other chemicals. These various industrial applications of oil shale have generated in recent years many studies on methods for extracting these oils, such as pyrolysis by conventional heating or under microwave irradiation, extraction with various solvents under sub and supercritical conditions and combustion in fluidized bed reactors. The oil shale industry as represented by the six countries maintained a combined yearly production of oil shale in excess of 30 million tons from 1963 to 1992. From the peak year of 1981, yearly production of oil shale steadily declined to a low of about 15 million tons in 1999. Most of this decline is due to the gradual downsizing of the Estonian oil shale industry. This decline was not due to diminishing supplies of oil shale but to the fact that oil shale could not compete economically with petroleum as a fossil energy resource. On the contrary, the potential oil shale resources of the world have barely been touched. Eastern Desert of Egypt is most notable for the presence of the phosphorites of Gebel Duwi Range discovered over 60 years and also black shale in the southern part of the Western and Eastern deserts. On the eastern side of the Gulf of Suez occur argillaceous deposits containing carbonaceous matter that induces a dark color, between grey and black. The oil shale in East Sinai, includes two areas 1. Al-Qusiema – Al- Kuntella area and 2. Al Thamad

Biography

Ehssan Nassef has completed her PhD from Alexandria University and Post-doctoral studies from Alexandria University (Petrochemical Dept.). She is a Consultant in Gas and Petrochemical Processing Engineering. She has published more than 15 papers in international journals in Environmental Eng. and Petroleum Eng. and has been serving as an Editorial Board Member of reputed journals.

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