

**Heating rate effect on fractional yield and composition of oil retorted from El-lajjun oil shale**

**Authors:** Adnan Al-Harashseh, Omar Al-Ayed, Moh'd Al-Harashseh, Rajab Abu-El-Halawah

**Abstract:** Oil shale samples were pyrolysed at different heating rates. The effect of heating rate on fractional composition of shale oil is investigated in 0.2-6 °C min<sup>-1</sup> range. It is found that increasing the heating rate increases the content of aliphatic of the liquid shale oil. Normal paraffins of (C<sub>10</sub>-C<sub>32</sub>) are identified in aliphatic fraction. The maximum concentration of these paraffin is found to be 9.9 wt% at heating rate of 2.5 °C min<sup>-1</sup>. Hydrogen and sulfur contents of the produced shale oil increase with increasing the carbon weight percent. In the studied heating range 0.2-6 °C min<sup>-1</sup>, the H/C is not affected. Sulfur weight percent of liquid shale oil is not significantly affected by increasing the heating rate. Increasing the heating rate increases the content of aliphatic of the liquid oil shale and decreases the aromatic fraction. GC-MS analysis indicated presence of saturated and unsaturated hydrocarbons in paraffinic fraction.