Chemistry and Technology of Fuels and Oils 2015

Change in Magnetic Properties of Reservoir Rocks During In-Situ Combustion of Crude

Kuzina D., Nurgaliev D., Morozov V., Eskin A., Utemov E.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2015 Springer Science+Business Media New York The pattern of degree of change in rock magnetization on heating is shown, based on thermomagnetic and thermal analysis of rock samples from Permian asphalt deposits. When core samples are heated, the degree of magnetization may increase significantly due to conversion of iron-bearing minerals essentially to magnetite. In the kinetics of magnetite formation in rocks, the main players are oxidation of light and heavy hydrocarbons, which determine both temperature and redox conditions. The feasibility of using ground magnetic mapping for monitoring the state of the in-situ combustion front is assessed.

http://dx.doi.org/10.1007/s10553-015-0584-y