

The composition and thermal properties of waxes in oil asphaltenes

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Abstract

© 2015 Akadémiai Kiadó, Budapest, Hungary. Asphaltenes of four Russian and Kyrgyzstan crude oils were investigated with calorimetry, gas chromatography and X-ray diffraction analysis. It was established that asphaltenes contain waxes. Hydrocarbon composition and the thermal properties of waxes co-precipitated with asphaltenes and isolated by acetone from crudes oils according to the EN 12606-2 method were determined and compared. It was found that n-alkanes C40+ dominate in the waxes co-precipitated with asphaltenes. Waxes in asphaltenes are characterized by high temperature and enthalpy of melting/crystallization. Co-precipitation of high molecular weight waxes with asphaltenes is necessary to consider in order to determine the actual content and composition of asphaltenes and total content and composition of waxes in crude oil more accurately.

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Keywords

Asphaltenes, Calorimetry, Crystalline phase, Gas chromatography, Hydrocarbon composition, Waxes