

BIOMARKER HYDROCARBON GEOCHEMISTRY OF BITUMENS IN THE PALEOZOIC DEPOSITS OF THE WEST SIBERIAN PETROLEUM BASIN

KOSTYREVA, E. A. Institute of Petroleum Geology SB RAS, Novosibirsk, Russia.

The scientific debates on oil sources in the Paleozoic basement salients in the West Siberian petroleum basin continue for many years. The composition of biomarker hydrocarbons in bitumens from the organic matter of the Paleozoic deposits of the central and northern regions of West Siberia is studied in the paper. All bitumens have been divided into three families using cluster analysis. Bitumens of family I show maximum concentrations of n-alkanes in the C17-C19 range, Pr/Ph ratio is slightly more than unity, cholestane and ethylcholestane concentrations are equal, hopanes and moretanes show the highest concentrations of C30 hydrocarbons, in tricyclanes the C19 and C20 hydrocarbons are in concentrations close to the C23-C26 hydrocarbons. Gammacerane has been identified in small concentrations in all of the samples. Bitumens of family II and III differ from those of family I in peak concentrations of n-alkanes in high-molecular range (C23-C25) and Pr/Ph ratio being much less than unity. The distribution of steranes and hopanes is similar in families I and II, and bitumens of family III are marked by peak ethylcholestane concentration (50%) and higher concentration of hopane (C30). In families II and III the C23-C26 tricyclane concentrations are much higher than the C19-C20. In bitumens of family II gammacerane concentration is significant and in those of family III this hydrocarbon is rare. The presence and composition of biomarker hydrocarbons in bitumens suggest the possibility of preserving hydrocarbon accumulations in the Paleozoic deposits studied. A few biogeochemical facies can be distinguished in them based on biomarker hydrocarbon composition.