Hydrocarbons in the upper permian PZ1-PZ2 cycles of the Kłodawa Salt Structure, central Poland.

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Streszczenie

Organic geochemical studies were carried out on the sulphate–shale–carbonate series, representing the upper PZ1 and lower PZ2 sections of the Zechstein cycles in the Kłodawa Salt Structure, located in the central part of the Zechstein Basin, in Poland. Hydrocarbons extracted from the Na1 and Na2 rock salts, the A1g and A2 anhydrites, the Ca2 dolomitic anhydrite and the T2 shale-carbonate rocks were analysed by gas chromatography mass spectrometry (GC-MS). Homological series of the n-alkanes and chained isoprenes indicate the algal nature of the organic matter with the characteristic chemiistry of type II kerogen deposited under anoxic conditions. The molecular composition of other biomarkers (n-alkylbenzenes, steranes) as well as phenenthrene and dibenzothiophene and their methyl derivatives revealed the highest maturity of the hydrocarbons (level of advanced stage of the oil-window zone) in the upper part of the Stinking Shale. In the adjacent beds, a gradual decrease in the maturity of the hydrocarbons was observed both upwards and downwards in the stratigraphic sequence. The main source rock of the hydrocarbons is represented by the Stinking Shale deposits. The observed trend of vertical variation in maturity through the rock profile is explained as resulting from the continuous vertical migration of hydrocarbons, expelled during maturation from the Stinking Shale rocks into the underlying and overlying strata.

Słowa kluczowe

Zechstein Basin, Kłodawa Salt Structure, PZ1–PZ2 rocks, hydrocarbons, biomarkers, maturity, hydrocarbons migration

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