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ORGANIC GEOCHEMISTRY OF CRUDE OILS FROM THE TURIJA OIL FIELD (SE PANNONIAN BASIN, SERBIA)

[1]Stevanović J., [1]Teslić S., [1]Kharchenko I.P., [2]Vuković N., [3]Stojanović K.
[1]NTC NIS-NAFTAGAS d.o.o., Put šajkaškog odreda 9, Novi Sad, Serbia
[2]University of Belgrade, Innovation Center of the Faculty of Mechanical Engineering, Serbia
[3]University of Belgrade, Faculty of Chemistry, Belgrade, Serbia
jelena.stevanovic@nis.eu, kharchenko.ip@nis.eu, Sladjana.Teslic@nis.eu, vukovic.nik@gmail.com, ksenija@chem.bg.ac.rs, xenasyu@yahoo.com

The Turija oil field, being an important oil field in Serbia, is located in the Banat Depression of the southeastern part of the Pannonian Basin. Oil samples from the Turija oil field were investigated in order to estimate origin, depositional environment, thermal maturity and age of the corresponding source rocks. For that purpose, a comprehensive analysis of biomarkers and aromatic compounds was performed.

n-Alkanes are predominant compounds in the total ion chromatograms of saturated fractions of all samples, showing that Turija oils are not biodegraded. The distributions of *n*-alkanes, which are characterised by equivalent abundances of long- and short-chain homologues and maximums at C_{17}, C_{21} and C_{27}, suggest a mixed aquatic-terrestrial origin. The uniform distributions of regular C_{27}-C_{29} 5α(H)14α(H)17α(H) 20(R) steranes support the previous assumption. The presence of oleanane in all samples is indicative for a contribution of angiosperm plants to the precursor organic matter (OM). Furthermore, the presence of this biomarker implies the Upper Cretaceous or younger age of the corresponding source rocks. Isoreniratane and its derivatives have been identified in all samples. Although isorenieratane can originate from β-carotene, which is widespread in algae, bacteria and terrestrial plants, the presence of other catagenetic products of isorenieratene (mass fragmentogram *m/z* 133 of the aromatic fraction) unambiguously confirms a contribution of green sulphur bacteria *Chlorobiaceae* to the precursor organic material [1].

The pristane to phytane (Pr/Ph) ratio ranges from 0.64 to 1.17, indicating reducing to dysoxic conditions during the deposition of precursor OM. The presence of the above mentioned isorenieratane derivatives implies the photic zone of anoxia. The stratification of water column is also supported by the presence of gammacerane and values of gammacerane index, GI = gammacerane x 10/(gammacerane + C_{30} 17α(H)21β(H)-hopane) > 1 in almost all the samples. Alkylated 2-methyl-2-(4,8,12-trimethyltridecyl) chromans (MTTCs) were detected in all studied oils. A predominance of 5,7,8-trimethyl-MTTC over 5,8-dimethyl-MTTC, 7,8-dimethyl-MTTC and 8-methyl-MTTC, associated with the values of MTTC ratio (MTTC = 5,7,8-trimethyl-MTTC/ΣMTTCs) in 0.44 to 0.65 range, indicates deposition of OM in a brackish environment [2].

The maturity of Turija oils was determined using typical sterane and hopane isomerisation maturity parameters and methyldibenzothiophene ratio, MDBTR = 4-MDBT/1-MDBT [3]. The obtained results indicate that Turija oils were generated in an early stage of oil window.

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