



## **The trace elements, “nontraditional” and radiogenic isotopes in crude oils and bituminoid of the Romashkinsky oil fields (Tatarstan, Russia)**

**Y. Ronkin** (1), A. Maslov (1), V. Izotov (2), L. Sitdikova (2), T. Akchurin (2), V. Anan'ev (2)

(1) Institute of Geology and Geochemistry, Russian Academy of Sciences, Ekaterinburg, Russia, (2) Kazan State University, Kazan, Tatarstan, Russia (y-ronkin@mail.ru / Fax: +7 343 3715252)

The patterns of relationship of the crude oils trace elements from different stratigraphical horizons of the Romashkin oil field (Pashin, Lebedayn, Kiselov, Bobrikov and the Tula horizons of Devonian and Carboniferous periods, of the Ufa and Kazan stage of the Permian period) are studied by ID SF-ICP-MS and ID MC-ICP-MS methods. It is established, that the Pashin horizon oils late ferriferous type ( $Fe > V > Ni$ ), whereas oils from the deposits of Upper Devonian and Lower Carboniferous periods are vanadic ones ( $V > Fe > Ni$ ), but with high Fe content. All the analyzed samples of crude oils have rather high values of  $La_N/Yb_N$  (19-27) and  $La_N/Sm_N$  ( $\sim 4.5-8$ ), that defines an abrupt inclination of REE normalized patterns to chondrite on schedules in corresponding co-ordinates. The Pashin and Bobrikov-Radaev oils horizons are characterized by  $Eu/Eu^*$  median values from 1.55 to 2.65; for the oils of Tula horizon  $Eu/Eu^* = 1.03$ , whereas oil from Kiselov level has negative Eu anomaly. For the Pashin oils it is typical a well disposed Ru specialization, whereas oils from younger deposits have either Rh - or Ru - specialization well shown as Ru. The value of relation  $Pd/Pt$  varies from 0.005 to 0.028. On parity of  $V/Cu$  and  $V/Pb$  the investigated oil samples have not undergone considerable kata - and also hyper - genesis. Rather high values of relation  $Ni/Cu$  ( $\sim 130-440$ ) testify to short ways of migration naphthids. For the first time carried out analysis of contents of radiogenic and "nontraditional" stable isotopes in crude oils and bitumen allows to identify genetic and age constrains for the

studied formations.