

## METAL POTENTIAL OF HYDROCARBON-BEARING SYSTEMS

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Within a natural hydrocarbon-bearing system, the following major constituents are specified: (a) mineralized water that hosts the hydrocarbon accumulations; (b) hydrocarbon accumulations; (c) the coal basin waters; (d) carbonaceous series. The lowermost components of this system are deep-seated gas accumulations (G) or S-rich condensate (C). These are overlain by salt beds and confined by brine from below. It is established that C-related brine is rich in As, Ge, Ga, and Sb, whereas G-related one carries high contents of about 20 chemical elements. At higher levels of the system the oil fractions occur, light varieties at lowest and viscous-at highest sub-levels. Specialization of these varieties and associated brines in numerous rare and noble chemical elements is considered. The 'oil' level is followed by that of combustible shale, controlled by relatively oxidizing environment. Re and Ag are the most typical microelements of potential economic significance here. The system is topped by the bitumen level where V, Zn, Ni, Cr, Mo, and W dominate among the microelements. Provided normal positions of gas and oil within the sequence are reversed, carbonaceous (coal-bearing) series are produced. In this case, accumulations of rare elements mark the extinct gas-oil and water-oil contacts. Distribution of rare and precious chemical elements in the Kizel coal basin, Russia, are considered, along with possibilities for extraction of these components from coal, hosting rocks, and waste waters.