

Thermobarometry and geochemistry of gases of veinlet-impregnated mineralisation in deposits of oil- and gas-bearing areas and metallogenic provinces: principles of the geotechnology of the determination of prospects of oil- and gas-presence of local structures

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A new approach to the elaboration of new prospective technologies (methods) was substantiated on the basis of crystallogenic and physical-chemical principles of the knowledge of mineral-forming fluids – mineralofluidology within the framework of the new scientific direction in geology – “thermobarometry and geochemistry of gases of veinlet-impregnated mineralization in deposits of oil- and gas-bearing areas and metallogenic provinces” as a natural phenomenon of the Earth’s lithosphere. It provides for creation of technologies and realization of prospecting for hydrocarbon fields essentially with ascertaining of the problem of their genesis and synthesis at an atomic-molecular level fixed by such defects in the mineral crystals as fluid inclusions.

Results of investigations implemented in the department of geochemistry of deep-seated fluids of Institute of Geology and Geochemistry of Combustible Minerals of NAS of Ukraine shows that oreols of the veinlet or veinlet-impregnated mineralization with fixed thermobarometric and geochemical regularities shape in host sedimentary rocks within the limits of hydrocarbon fields in consequence of the flow of deep-seated fluids. Findings allow to admit that the level of gas-saturation, extent of variety and spectrum of elemental composition of hydrocarbons of fluid inclusions in veinlet minerals in the roofing and lateral parts of hydrocarbon deposits directly combined with quantity of hydrocarbons incoming by fractures in traps in rocks. At the same time saturation by hydrocarbon-containing fluids carbonate, quartz-carbonate and other veinlets and their greatly fuller spectrum of the substantial composition towards order of magnitude and more exceed their values in host rocks but the concentration of essentially hydrocarbons increases in the direction for their accumulation in deposits-fields.

These facts were found the basis of the geotechnology of the determination of prospects of oil- and gas-presence of local structures obtain by thermobarometric and geochemical indicators belong to the branch of the exploration geology and geochemistry and is used to ascertain genetic questions, so to solve tasks of the mineralogical-geochemical prediction and prospecting for hydrocarbon fields in the local structures of oil- and gas-bearing areas.

The comparison of the content of fluid inclusions of veinlets and enclosing rocks based on the sections of a number of boreholes has shown the considerable possibilities of the developed technology and prospects of the complex usage of mineralofluidological indicators while predicting hydrocarbon fields in the local structures of the sedimentary strata promising for oil and gas.