

Hydrocarbons and Diamondiferous Structures Formation in Different Depths of the Earth Crust

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Abstract : The investigation results of rocks at high pressures and temperatures have revealed the intervals of changes of seismic waves and density, as well as some processes taking place in rocks. In the serpentized rocks, as a consequence of dehydration, abrupt changes in seismic waves and density have been recorded. Hydrogen-bearing components are released which combine with carbon-bearing components. As a result, hydrocarbons formed. The investigated samples are smelted. Then, geofluids and hydrocarbons migrate into the upper horizons of the Earth crust by the deep faults. Then their differentiation and accumulation in the jointed rocks of the faults and in the layers with collecting properties takes place. Under the majority of the hydrocarbon deposits, at a certain depth, magmatic centers and deep faults are recorded. The investigation results of the serpentized rocks with numerous geological-geophysical factual data allow understanding that hydrocarbons are mainly formed in both the offshore part of the ocean and at different depths of the continental crust. Experiments have also shown that the dehydration of the serpentized rocks is accompanied by an explosion with the instantaneous increase in pressure and temperature and smelting the studied rocks. According to numerous publications, hydrocarbons and diamonds are formed in the upper part of the mantle, at the depths of 200-400km, and as a consequence of geodynamic processes, they rise to the upper horizons of the Earth crust through narrow channels. However, the genesis of metamorphogenic diamonds and the diamonds found in the lava streams formed within the Earth crust, remains unclear. As at dehydration, super high pressures and temperatures arise. It is assumed that diamond crystals are formed from carbon containing components present in the dehydration zone. It can be assumed that besides the explosion at dehydration, secondary explosions of the released hydrogen take place. The process is naturally accompanied by seismic phenomena, causing earthquakes of different magnitudes on the surface. As for the diamondiferous kimberlites, it is well-known that the majority of them are located within the ancient shield and platforms not obligatorily connected with the deep faults. The kimberlites are formed at the shallow location of dehydrated masses in the Earth crust. Kimberlites are younger in respect of containing ancient rocks containing serpentized bazites and ultrabazites of relicts of the paleoceanic crust. Sometimes, diamonds containing water and hydrocarbons showing their simultaneous genesis are found. So, the geofluids, hydrocarbons and diamonds, according to the new concept put forward, are formed simultaneously from serpentized rocks as a consequence of their dehydration at different depths of the Earth crust. Based on the concept proposed by us, we suggest discussing the following: -Genesis of gigantic hydrocarbon deposits located in the offshore area of oceans (North American, Mexican Gulf, Cuanza-Kamerunian, East Brazilian etc.) as well as in the continental parts of different mainlands (Kanadian-Arctic Caspian, East Siberian etc.) - Genesis of metamorphogenic diamonds and diamonds in the lava streams (Guinea-Liberian, Kokchetav, Kanadian, Kamchatka-Tolbachinian, etc.).

Keywords : dehydration, diamonds, hydrocarbons, serpentinites

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