PLATINUM RESOURCES THE WORLD OCEAN

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Ferromanganese concretions and crusts of the Ocean are the products of activation of the upper mantle in the process of the genesis and further gradual development of the World Ocean as a planetary geological structure. Platinum is found practically in all varieties of oxide Fe-Mn ores in the quantities 0.015-0.1 gr./ton, which indicates to the abyssal origin of the primary substance.

The most platinum-rich are cobalt-bearing Fe-Mn crusts – hydrogenous formations of seamounts and guyots. Here the platinum content on the average reaches 0.3-0.5 gr./ton. The depth interval, productive for platinum accumulation is 1200-1400 m. Deposition of platinum in Fe-Mn formations is connected with its presence in seawater in the form of dissolved chloride and ammonium complexes (as well as Co), near the oxygen compensation layer, or only in the chloride complexes in the abyssal areas, where sedimentary-diagenetic concretions are formed. A close association of platinum with ammonia compositions in the depths of the Peru Basin completely withdraws platinum from the nodule formation processes. A hydrogenous mechanism of platinum accumulation in the oxide ferromanganese ores of the Ocean predetermined a special geochemistry, when platinum is dominating at a minimal participation of palladium and iridium. A resource evaluation of oceanic platinum demonstrates its enormous quantities, concentrated in ferromanganese formations (exceeding 12 thousand tons). In the coming 21-st century platinum may become a by-product, the Fe-Mn formations - a new Pt-bearing element, important not only for modern, but also ancient, now buried, analogues.