

## Similarities some spectroscopic characteristics of placer diamonds and carbonado brazil

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Carbonado, with respect to the genesis, is undoubtedly one of the most puzzling varieties of diamond, which is typical of jewelry containing a single-crystal diamond placer deposits of Brazil, as well as placer Venezuela and Ubangi (Central Africa). One of the questions of origin carbonado can be formulated as follows: "whether random association placer" carbonado – single-crystal diamonds, "or yet both associate associate some paragenetic relationships?". Despite the obvious morphological and anatomic-nomic and real differences, carbonado, and single-crystal diamond there are still some similarities, at least, expressed in the presence of the same structural defects as revealed by various spectroscopic methods.

Nitrogen in carbonado, as is known, is located mainly in the non-agregatization or low-agregatization condition. So, with the help of ESR in carbonado are usually found isolated nitrogen atoms – P1 paramagnetic centers (analogous to the optically active C-defects in diamond). Luminescence methods in carbonado fitted with various defects in the system nitrogen-vacancy nature-470, 484, 488, 490 nm, H3 (R-line of 503.2 nm), T1 (R-line of 575.0 nm). There is information on other low-agregatization defects. Nevertheless, independent studies in carbonado also revealed the presence of defects with a high degree of nitrogen aggregation. The presence of such defects in diamonds is usually associated with long-finding diamonds in the mantle (so-called "mantle annealing"). Among these "mantle tags in carbonado were reported active in the IR absorption of defects agregatization nitrogen P2 paramagnetic centers and their optical analogues of N3-centers. Therefore, one explanation of the nature of carbonado is to recognize the possibility of his residence in the mantle, which is an alternative hypothesis of impact origin of carbonado.

Our experimental data show that the field of luminescence due to the samples studied Brazilian carbonado N3 centers and H3, have a pronounced local character. For example, the PL spectrum with an intense system of N3 was recorded at a small (less than 1 mm), the glowing blue area of a sample carbonado. That is the assumption that the crystallization in the mantle, perhaps not valid for the whole unit carbonado, but only for the individual terms of its small individual diamond crystals, or adhesions.

According to literature data, obviously, it is difficult to completely an adequate idea of how to actually form the T1 centers and other low-agregatization nitrogen-vacancy defects in the black diamond and diamond. However, it may be noted noted by various authors a prominent role in the formation of these defects in the intensity of natural radiation and heat can easily see that the intense radiation exposure in combination with high-temperature annealing "- terms that are most" fit "to the pre-Cambrian history of terrestrial diamonds. Thus, carbonate formed was Precambrian. Precambrian age is found in diamond-bearing metasedimentary collectors, which are related we studied the Brazilian diamonds, containing the T1 centers, and matches these diamonds kimberlite magmatism could occur no later than late age limit of glaciation San Francisco, has formed diamondiferous diamectit. It was from diamonds of various Precambrian placers of the world most marked signs of radiation damage, described as "a sign of antiquity." Note that the presence of vacancy defects and high-temperature annealing as a necessary condition for P1-centers in diamond and black diamond suggests also the idea about their possible present or former natural radioactivity. Based on the experimental results and analysis we can conclude about the prospects for further study of the PL (80 K) Brazilian placer association "carbonado - monocrystalline diamonds" in the following areas.