

## Mantle processes inferred from Os isotopic compositions and micro lectures of carbonado diamonds

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Carbonado, a type of natural polycrystalline diamond, has characteristics distinct from those of typical natural diamonds: for example, no genetic relations to kimberlites, low carbon isotopic ratios, and the lack of mantle-derived mineral inclusions, and so on. Based on these characteristics, several diverse hypotheses have been proposed on the origin of carbonado. At present, no conclusive evidence has been proposed to settle the controversy. The most important point we have to remind is that carbonado had been heavily altered after the crystallization of diamonds and the grain boundaries of micro-diamonds in carbonado may have lost the intrinsic information on the formation of diamonds consisting of carbonado.

In this study, we tried to extract geochemical and mineralogical information from inside of diamond grains and grain boundaries, independently. We conducted Os isotopic analysis and electron microscopic observation on carbonado samples collected from placer deposits in the Central African Republic. We obtained very different results between inside of diamond grains and grain boundaries both on the Os isotopic values and mineralogy of inclusions. The origin of carbonado will be discussed based on the intrinsic information obtained from the inside of diamond grains.

Keywords: carbonado, Os isotopic compositions, platinum group elements, mineral texture, inclusions, diamonds