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How to put a constraint on discussions if ophiolite-hosted diamonds are indigenous or not?

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The origin of ophiolitic diamonds (first discovered in 1981 in Loubasa chromitite of China and later in many other ophiolites of the world) remains a subject of controversial discussions. Review papers summarize four main concepts of these diamonds origin (Liou et al., 2009; Dobrzhinetskaya et al., 2022). They are: (i) Diamonds are crystallized in the deep mantle at high P and high T and then are transported to the shallow mantle by mantle convection or mantle plumes to the shallow upper mantle. (ii) Diamonds crystallization at low T and low P from carbon-rich fluids that form during alteration of chromitites and other fragments of oceanic crust at shallow depths (Farré-de-Pablo et al. 2018-2020; Pujol-Solà et al. 2020). (iii) Diamonds and reduced metallic alloys formation from lightning strikes (Ballhaus et al. 2017; 2021). (iv) All ophiolitic diamonds are products of laboratory's contaminations (Litasov et al. 2019, 2020).

How to put a constraint of the discussion if diamond from ophiolite is indigenous or it is a product of contamination? The narrative of discovery of ophiolitic diamonds to some degree reminds the story of the first discovery of micro-diamonds in metamorphic rocks of "continental affinities" known now as ultra-high-pressure metamorphic terranes. Harry Green (2005) has described those discussions as "a confused mixture of surprising, sometimes spectacular discoveries and emotional reactions". The careful choices of methods applied for ophiolitic diamond studies can be very successful to prove their origin, if diamond abrasives/tools are eliminated from every step of the samples preparation. The most important is that the same diamond found in a polished thin section surface should be studied using a combination of techniques such as optical microscopy, conventional and synchrotron-assisted Raman and Infrared spectroscopies, and SEM, FIB-TEM confirmation of diamonds-host minerals interface. The most important is the observations of the diamond-interface boundaries in different scales using high-resolution secondary electron images with aid of SEM, and FIB-TEM techniques. The critical samples should be also shared between different research groups so that a wide range of analytical techniques can be utilized to minimize the most controversial interpretations of the ophiolitic diamonds origin.