

On the origin of diamond in ophiolite

RICHARD WIRTH

Helmholtz Centre Potsdam, GFZ German Research Centre for Geosciences, Telegrafenberg, Section 3.5 Surface Geochemistry, 14473 Potsdam, Germany, (wirth@gfz-potsdam.de)

The discovery of diamond in ophiolitic peridotite and chromite in Southern Tibet almost 20 years ago was totally unexpected and caused great surprise [1]. Meanwhile, diamond occurrence in ophiolite has been reported from many different localities such as Mongolia, Myanmar, Northern Ural, Turkey, Albania and Southern Mexico. However, the origin of these diamonds is still under debate. Some scientists still argue that these diamonds are simply contaminations caused by ore or sample processing. Meanwhile, different models, how these diamonds could have formed, have been published. The most common model suggests that diamonds have formed at pressure $> 4\text{GPa}$ and approx. 120 km depth and were later incorporated into the chromitites [2]. Even the Mantle transition zone was suggested to be a source of such ophiolitic diamonds [3] Another idea is that these diamonds have formed by lightning strike [4] and a recent paper suggests metastable formation of diamond at shallow conditions [5].

Even the fraction of scientist that believes in a natural occurrence of ophiolitic diamonds has not yet attained an agreement on their origin. Based on microstructural observations and nano-inclusions observed in ophiolitic diamond a novel and conclusive scenario of the formation and occurrence of diamond in ophiolite is presented.

References

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