

# **A CARBON-RICH MULTIPHASE INCLUSION IN A CHINESE DIAMOND AND ITS GEOCHEMICAL IMPLICATIONS**

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## **ABSTRACT**

A multiphase inclusion in a diamond from Liaoning province, China consists of an olivine covered with large plates of graphite. Both phases are enclosed in a thin layer of glass that separates the multiphase inclusion from the host diamond. Microcrystallites of diamond and graphite are embedded in the olivine and graphite plates. The characterization and distribution of all phases has been determined using micro-Raman, Infrared and Auger spectroscopy, and electron microprobe analysis. The structural form and morphology of the microcrystallites of diamond and graphite in the olivine suggests they formed contemporaneously with the olivine and the host diamond. An alternative suggestion is they formed from carbon previously dissolved in the olivine at high pressure and temperature. The genesis of the large graphite plates on the surface of the olivine and beneath the glass film is less easily understood, especially as the composition of the glass is not fully documented. The occurrence of glass associated with other inclusion in diamond has been recognized previously by others although the compositions are varied. This is the first record of diamond and graphite occurring within a silicate inclusion in diamond.