

Diamond dissolution and morphological change in silicate melt

Yusuke Kozai[1], Makoto Arima[2]

[1] Geological Institute, Yokohama Nat Univ, [2] Geolo. Instit. Yokohama Natl. Univ.

To understand the dissolution mechanism and morphological change of diamond in silicate melts, experiments have been done in the diamond-kimberlite and diamond-lamproite systems at 1.0-2.5 GPa, 1300-1500 C. Extremely higher rate of diamond dissolution was observed in the kimberlitic melts than in the lamproitic melts. Diamond dissolves into kimberlitic melts at a rate of 0.014 mm/hr and into the lamproitic melt at a rate 0.0026 mm/hr. Diamond dissolution into kimberlitic melts was strongly suppressed by addition of water or carbonate into the melts. The present experiments well represent morphological changes observed in natural diamonds.