

## The homogenization of carbonate-containing microinclusions in diamonds at upper mantle P-T parameters

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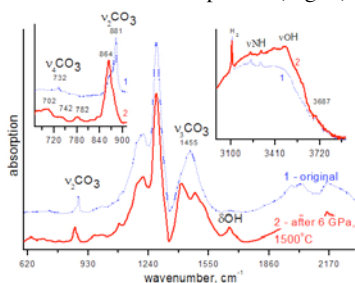
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Results of an annealing study, carried out in upper mantle conditions ( $T=1400-1500^{\circ}\text{C}$ ,  $P=6\text{ GPa}$ ), of fluid/melt microinclusions in natural diamonds of cubic habit from Internationalnaya (Yakutia) are presented.

It is established that the long annealing ( $t = 20$  hours) at  $T = 1400^{\circ}\text{C}$  have no signs of the transformation in microinclusions. In the FTIR spectra after the subsequent high-pressure annealing at  $T=1500^{\circ}\text{C}$  and  $t=20$  hours a distinct changes in the phase composition of microinclusions are observed. These changes are fixed in the bands corresponding to the vibrations of carbonate phases (Fig. 1).



**Figure 1:** FTIR spectra of cubic diamond before (1) and after (2) annealing.

Probably the microinclusions partly melted during annealing at  $1500^{\circ}\text{C}$  and there was subsequent dissolution of dolomite in carbonate-silicate melt (homogenization). The obtained experimental data allow to evaluate homogenization temperature of microinclusions between  $1400$  and  $1500^{\circ}\text{C}$ . Because there are evidences for existence of melt in natural diamond crystallization, the formation of cubic diamonds of Internationalnaya could occur at sufficiently high temperatures, not lower  $1400^{\circ}\text{C}$ .

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