

Figure S1

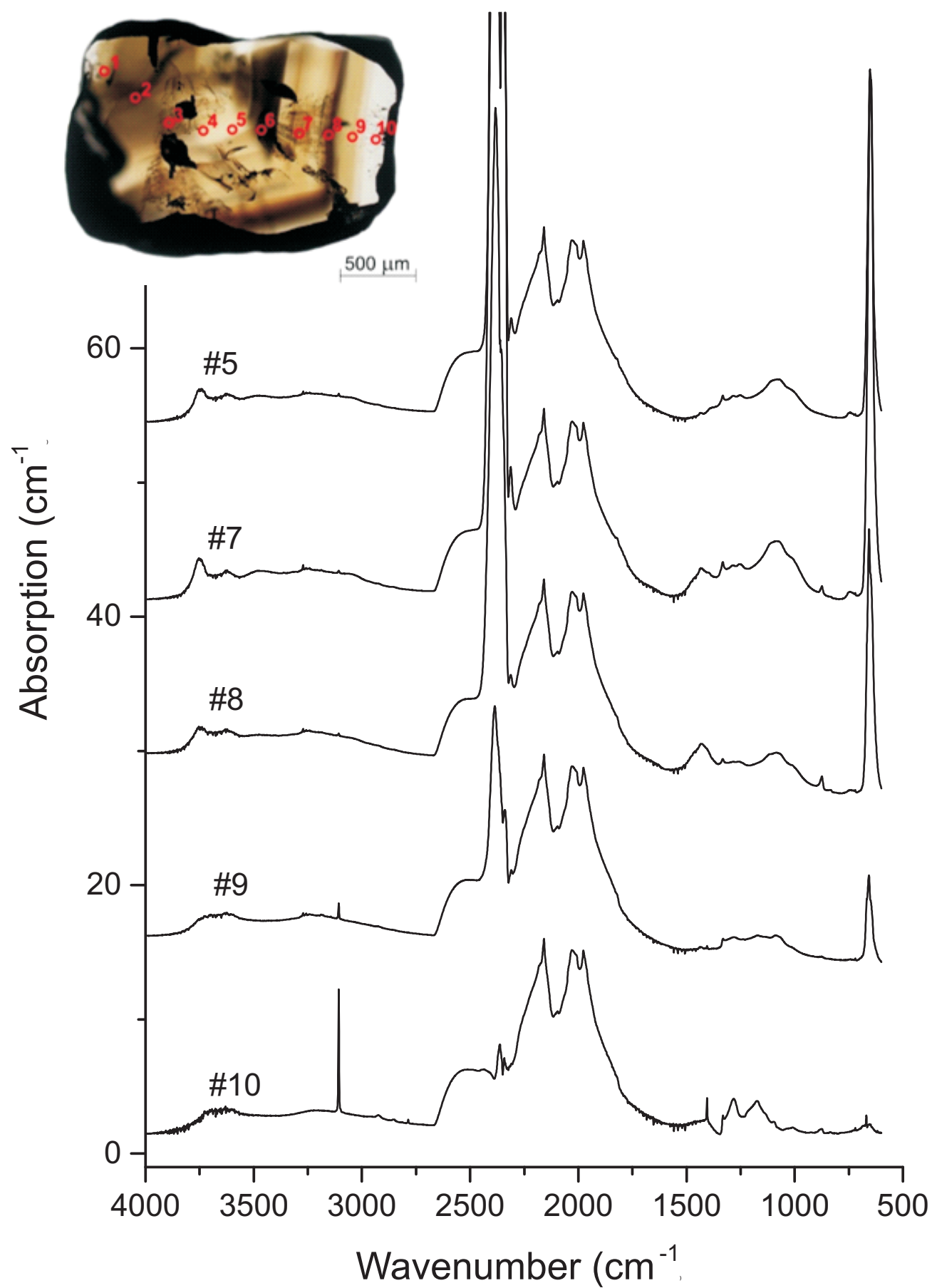


Fig. S1. Representative FTIR spectra of XLS-131 diamond sample.

Figure S2

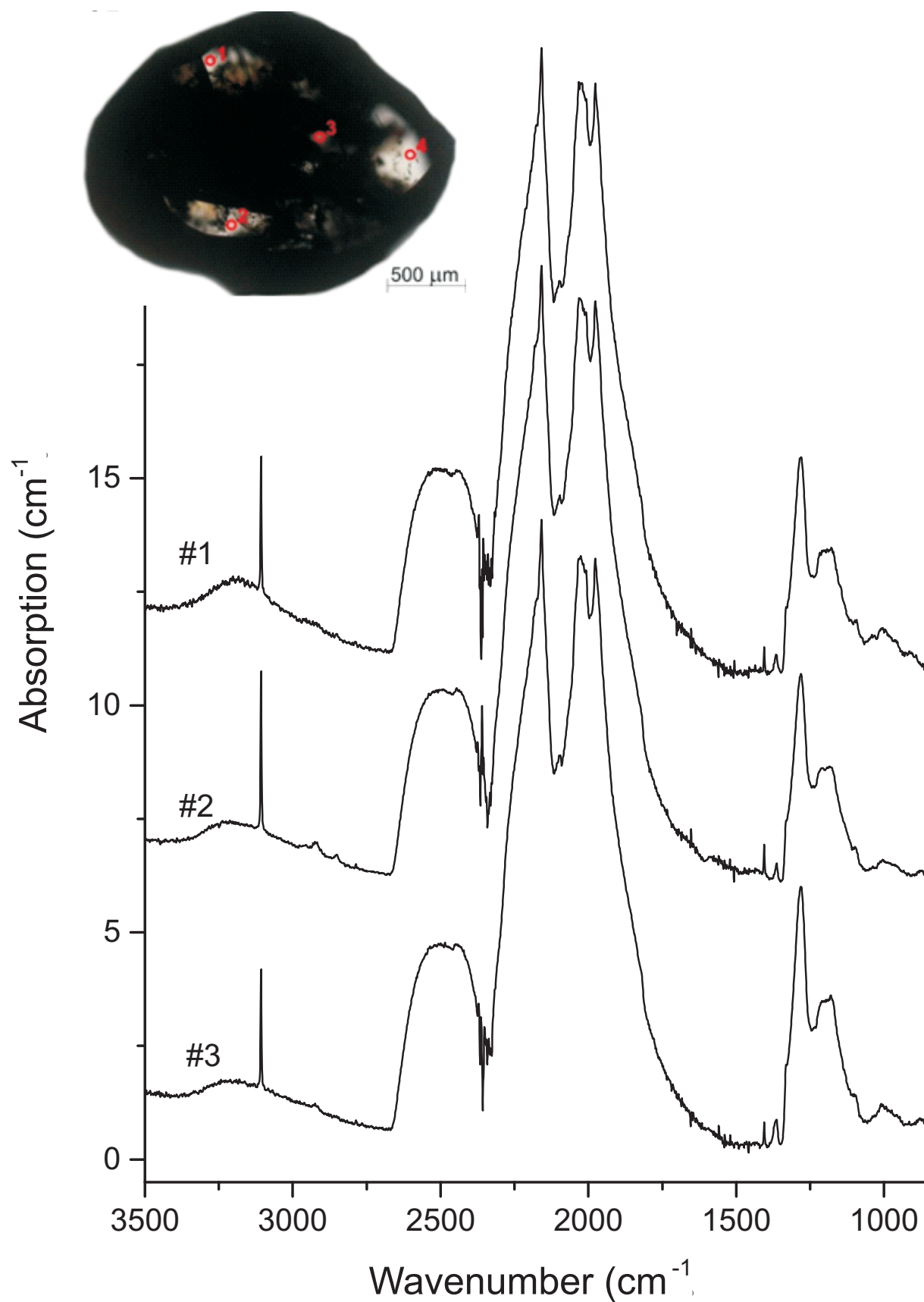


Fig. S2. Representative FTIR spectra of ISTD-180 diamond sample.

Figure S3

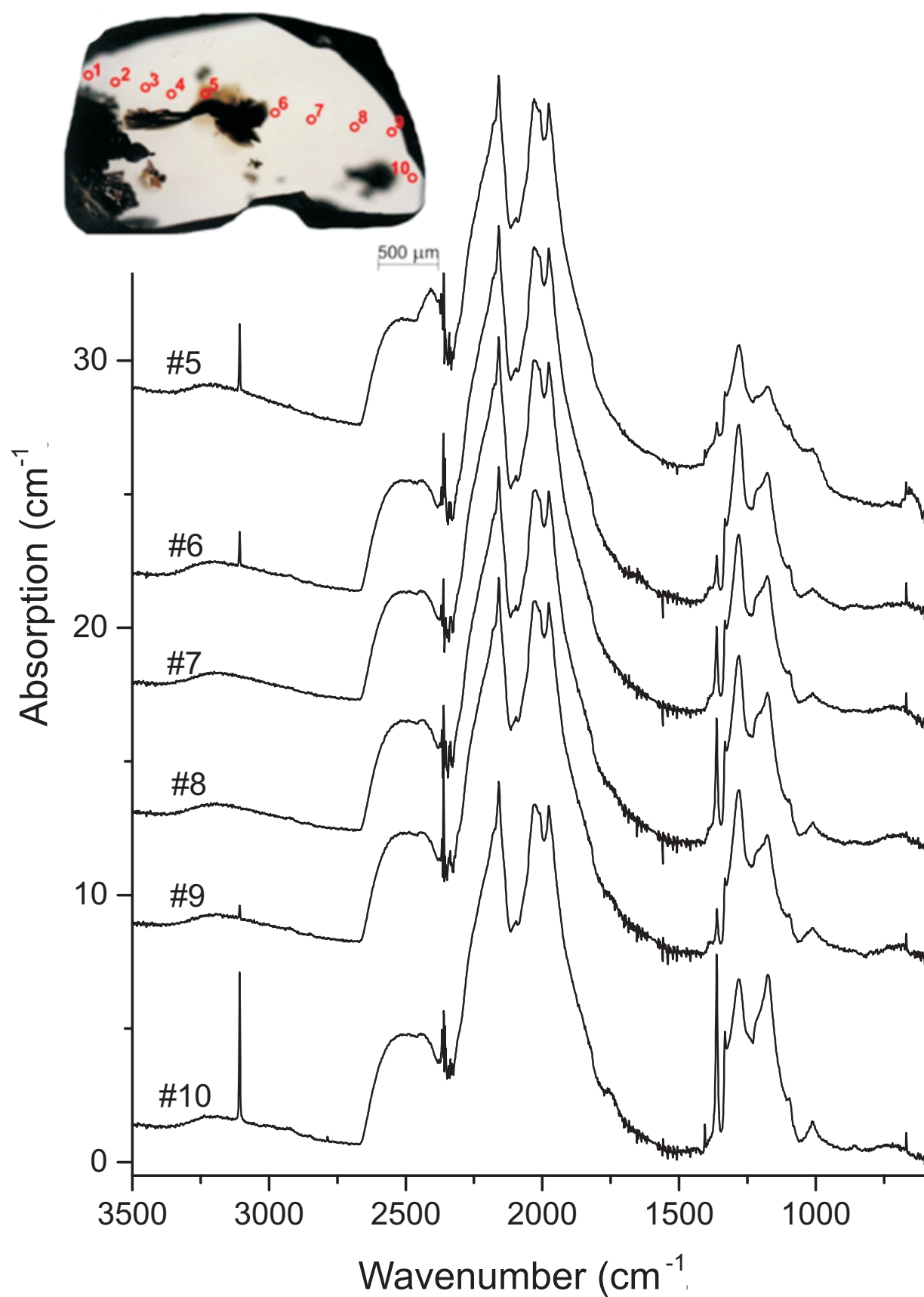


Fig. S3. Representative FTIR spectra of ISTD-151 diamond sample.

Figure S4

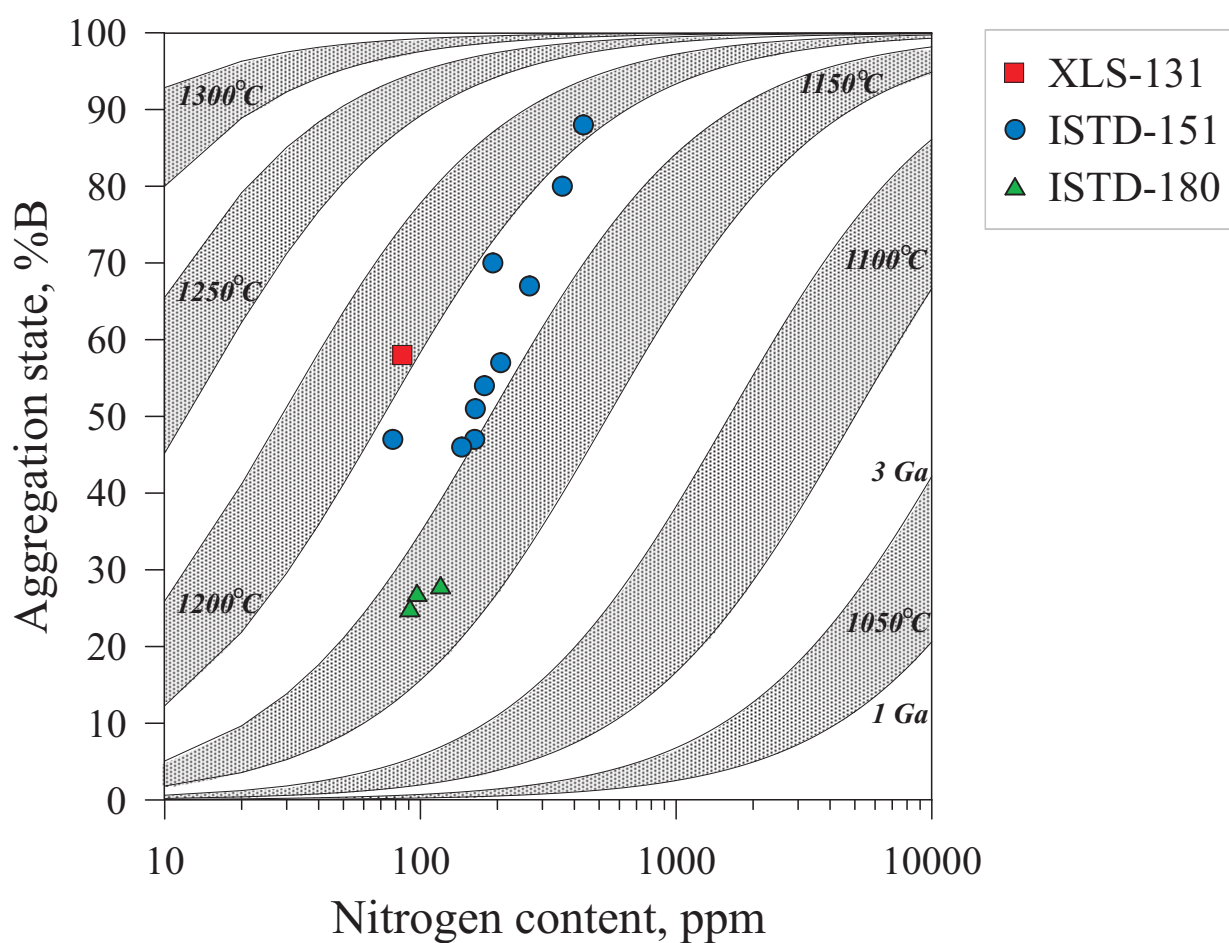


Fig. S4. Plot of nitrogen aggregation state (%B) versus nitrogen content for studied diamonds. Isotherms for mantle residence times of 1 and 3 Ga were constructed from data (Taylor et al., 1990, 1996).

Figure S5

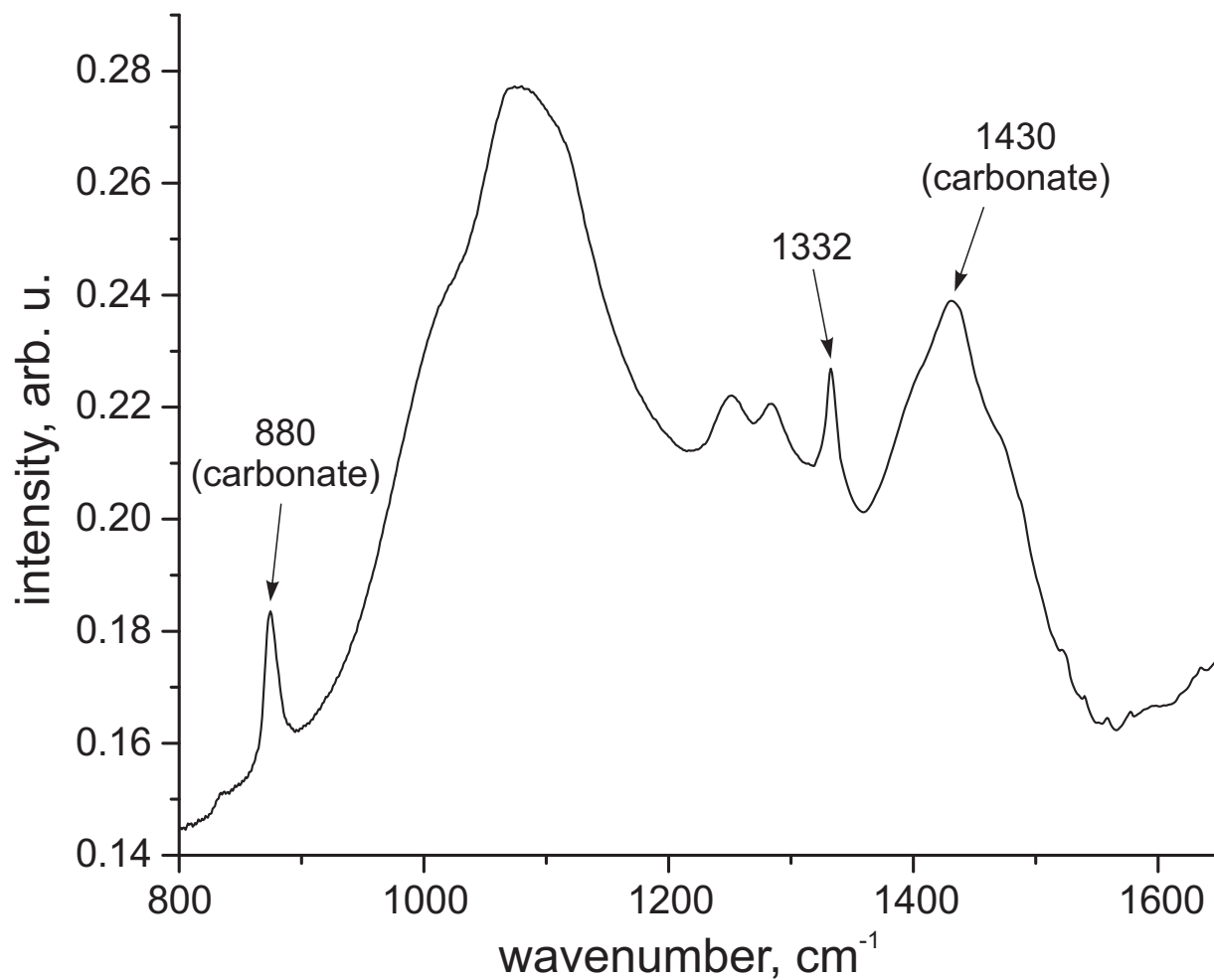


Fig. S5. FTIR spectrum of halos of microinclusions. Bands corresponding to CO₃ vibrations are marked.

Figure S6

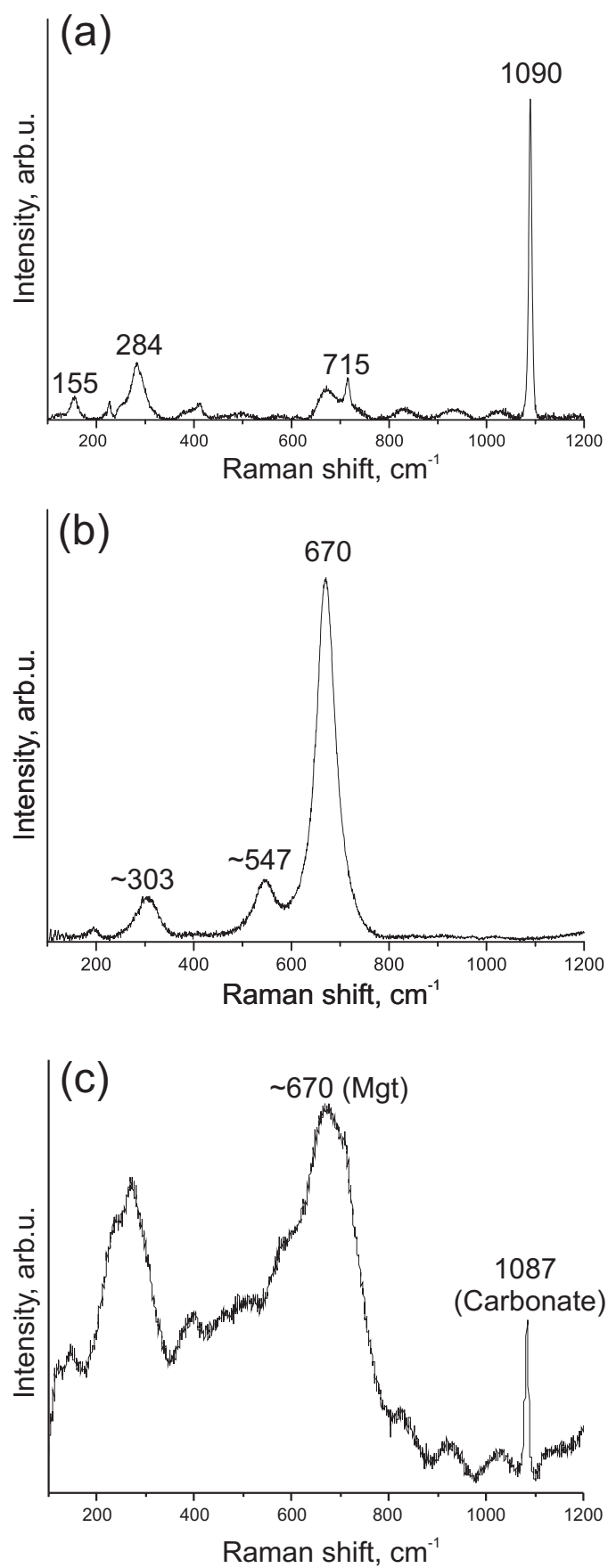


Fig. S6. Raman spectra of inclusion 1 in diamond XLS-131: a – calcite, b – magnetite, c – magnetite + calcite.

Figure S7

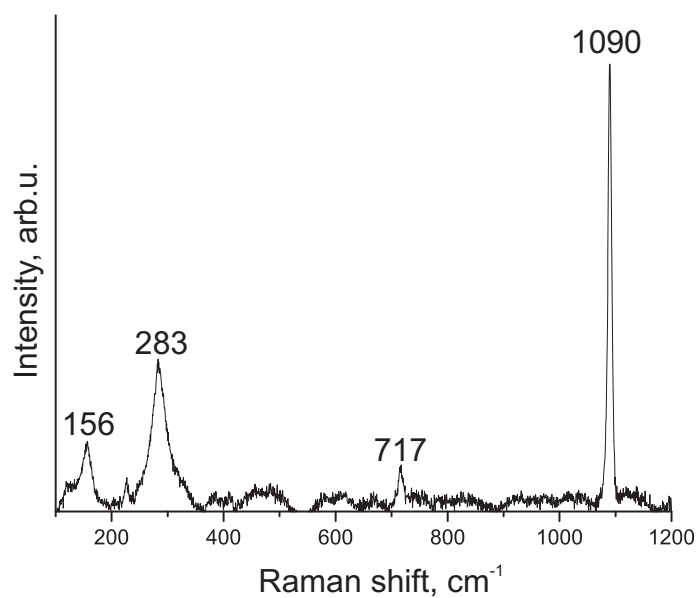


Fig. S7. Raman spectra of the carbonate zone in inclusion 3 in diamond XLS-131.

Figure S8

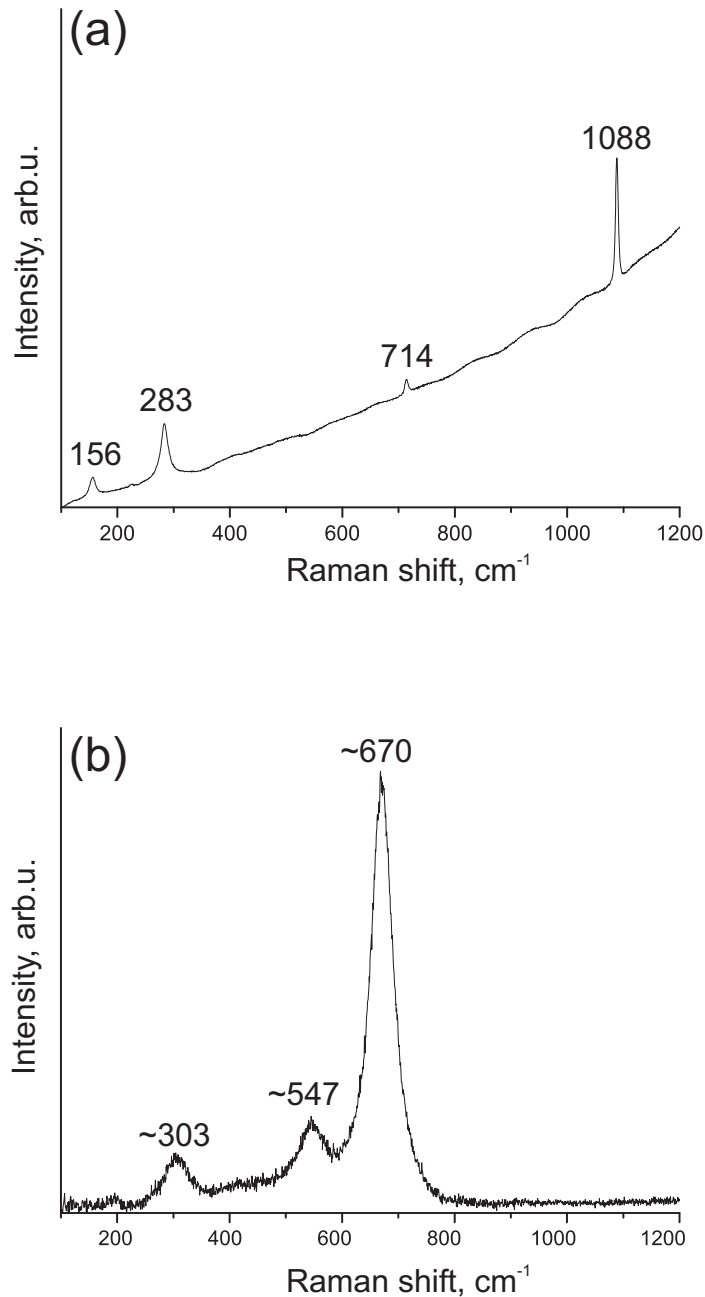


Fig. S8. Raman spectra of inclusion 1 in diamond ISTD-180: a – calcite (dark zone), b – magnetite (light zones), c – magnetite + carbonate (light zones). Lines corresponding to hematite are due to the magnetite–hematite phase transition as a result of local heating by laser radiation (Thyr and Edvinsson, 2023). The intense band at 1086 cm^{-1} and line 711 cm^{-1} is assigned to carbonate.

Figure S9

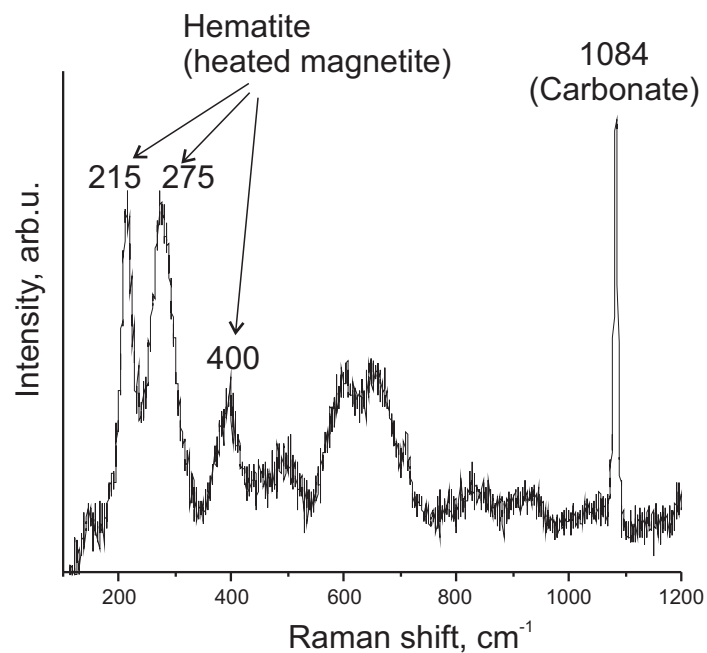


Fig. S9. Raman spectrum of the light zone of inclusion 3 (Inc. 3) in diamond ISTD-180.

Figure S10

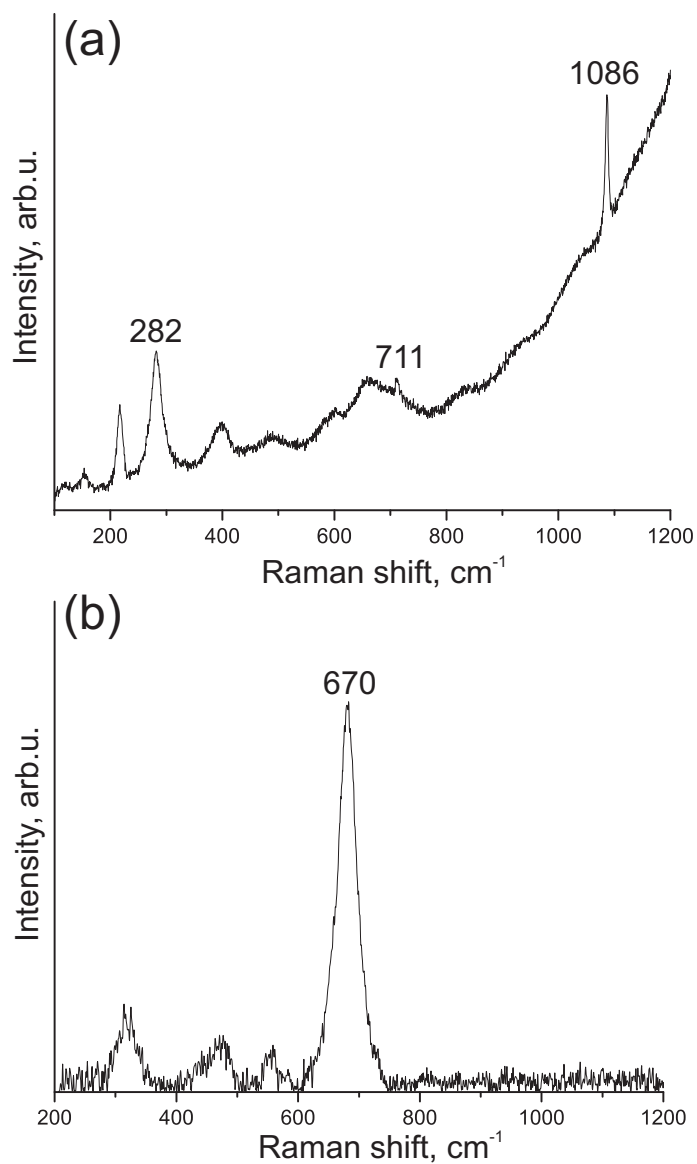


Fig. S10. Raman spectra of inclusion 2 (Inc. 2) in diamond ISTD-151: a – calcite (dark zones), b – magnetite (light zones).

Figure S11

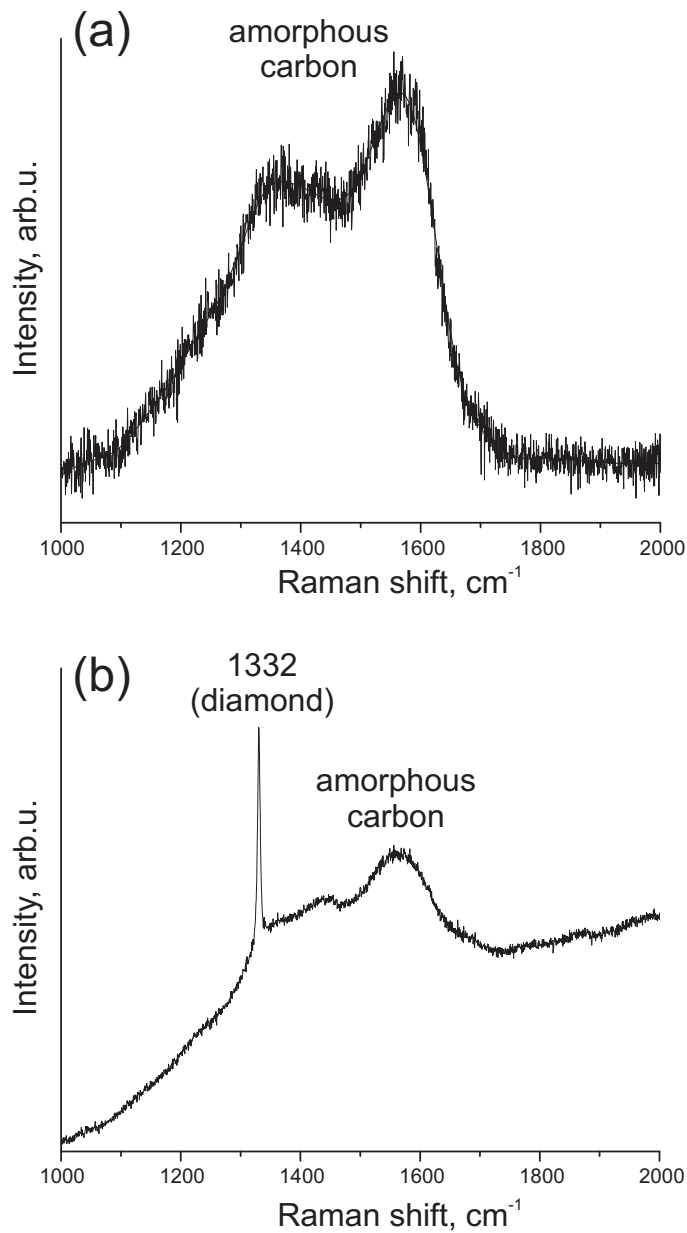


Fig. S11. Raman spectra of carbon phases present in the oxidized zone of sulfide inclusions: a – amorphous carbon (mainly disordered graphite), b – amorphous carbon with first-order Raman diamond peak.