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A near-infrared spectroscopic study of hydroxyl in natural chondrodite

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ABSTRACT

A chondrodite from a marble from Ambasamudram near the Archankovil shear zone, Kerala Khondalite Belt, India, was characterized by powder X-ray diffraction (XRD), electron microprobe and Fourier Transform Infrared (FTIR) spectroscopic techniques. FTIR measurements were carried out in the range 400–10000 cm^{-1}, to record both fundamental and overtone modes. A set of absorption peaks at 3393, 3411, 3561, 3571, 3650, and 3685 cm^{-1} were observed in the fundamental OH-stretching mode region. In the combination-mode region modes observed at 4103, 4328, and 4440 cm^{-1} indicate that the majority of *M* sites in this chondrodite are occupied by Mg. The modes at 3650 and 4520 cm^{-1} could be due to silanol (Si-OH) groups. A definite band was also observed at 5072 cm^{-1}, whose origin presently is not clear. A weak overtone mode of the strongest OH stretching was observed at 6967 cm^{-1}.