

VIBRATIONAL SPECTRA OF KLDNOITE, NATURAL ANALOGUE OF PHTHALIMIDE C₆H₄(CO)₂NH

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Aromatic compounds occur very rarely as minerals. Kladnoite, the only mineral containing nitrogen as NH-group, was discovered on the burnt coal dumps of Kladno, Czech Republic in 1937 and more later it was found in the Chelyabinsk coal basin, Russia (ROST, 1937; CHESNOKOV & SHCHERBAKOVA, 1991). X-ray diffraction patterns of Czech and Russian kladnoite are similar and correspond to synthetic phthalimide (CHESNOKOV & SHCHERBAKOVA, 1991; ZACEK et al., 2000). A detailed assignment of most of the observed frequencies in vibrational infrared (IR) and Raman spectra of phthalimide (PIMH) polycrystalline and single crystal samples has been previously reported (HASE, 1978). For monoclinic phthalimide crystals symmetry (space group $P2_1/n$, $n = C_{2h}^5$, $Z = 4$), all vibrational A_g and B_g (A_u , B_u) fundamentals are Raman (IR) active (MOROZ, 1998). Main PIMH modes are observed in the Fourier transformed (FT) IR (Fig. 1a) and FT-Raman (1064 nm excitation, Fig. 1b) spectra of kladnoite from Russia. As against a Raman spectrum of synthetic PIMH (HASE, 1978; AROCA & CLAVIJO, 1988), attempts to record Raman spectra using 514.5 nm excitation were unsuccessful due to strong fluorescence with maximum at 568.6 nm shown by the samples with this laser line. An analysis of NIR FT-Raman, FT-IR spectra and fluorescence of both Russian and Czech kladnoites is presented.

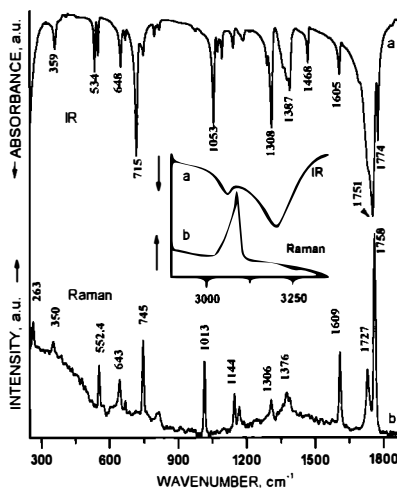


Fig. 1. FT-IR (a) and NIR FT-Raman (b) spectra of Russian kladnoite

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