
OPTICAL AND THERMAL PROPERTIES OF $\text{NiSO}_4 \cdot 6\text{H}_2\text{O}$ CRYSTALS DOPED WITH MAGNESIUM IONS.

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Nickel sulfate hexahydrate $\text{NiSO}_4 \cdot 6\text{H}_2\text{O}$ (NHS) crystals are known to possess an optical transmission spectrum which has attracted much attention because it presents two regions with high transmission efficiency of approximately 80%, the first region being between 200 and 350 nm and the second between 400 and 600 nm, and a high absorption efficiency in other regions of the UV-VIS spectrum. A light transmission spectrum with these characteristics is similar to an optical filter. A single nickel sulfate hexahydrate crystal doped with manganese ions was grown. The green block was grown by the slow evaporation method. Its structural, optical and thermal properties were studied using a Raman spectroscopy, X-ray diffraction, transmission spectrometry, and TGA. A careful investigation of the crystal structure showed that doped samples of nickel sulfate hexahydrate have the α -NSH phase with a tetragonal structure but with different lattice parameters. The fractional coordinates of the atoms in doped crystals are slightly different with respect to coordinates of the atoms in the pure crystal. The dehydration temperature of doped crystal was found to be higher than that of pure crystal. The UV-VIS spectrum of both crystals were observed to be very similar. The changes in dehydration temperature were associated to changes in crystal structure.