Application of lanthanide (Eu,Nd) spectroscopy as a structural probe of diluted double phosphates.

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The present studies are focused on the application of europium(III) emission as a structural probe of diluted double phosphate and the determination of the number of metal sites, as well as their symmetries. The influence of the M(I) ions on the structure of phosphates is shown in the emission spectra at 77 K. The IR and Raman spectra were measured and used in the assignment of the vibronic components of electronic transitions. The electron–phonon coupling was analyzed in the emission and excitation spectra of europium double phosphate. Moreover, absorption spectra at 293 and 4 K as well as intensity analysis of Nd(III) f–f transition were used in the detection of structural modifications in both types of phosphates —rubidium (1) and sodium (2) salts. The energy level diagram was proposed and compared to the earlier reported data for different types of phosphates.

Słowa kluczowe

M3Ln(PO4)2 (M=Na, Rb Ln=Eu, Nd), Spectroscopy, Luminescence, Excitation spectra, Intensities of f-f transitions, Electron-phonon coupling

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