Spectroscopy and structure of Eu(III) complex with *N*-methylglycine.

Autorzy

Paula Gawryszewska

Lucjan B. Jerzykiewicz

Piotr Sobota

Janina Legendziewicz

Rok wydania

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Streszczenie

Synthesis and spectroscopic characterization of a Eu(III) complex with *N*-methylglycine (sarcosine=sar) are reported. The crystal structure was determined by X-ray diffraction with the final R=0.036. The compound crystallizes in the *P1* space group with Z=1. In the structure dimeric units are formed in which two metal ions are linked by four carboxyl groups; two simple bridging and two chelating ones. The $[Eu(C_3O_2H_7N)_3(H_2O)_2]_2^{6+}$ dimeric cationic units are further linked by two simple carboxyl bridges forming a polymeric chain. In the dimeric cation the lanthanide ions occupy two nonequivalent structure positions. Amino acid molecules reside as zwitterions; thus nitrogen atoms are not involved in metal ion coordination. Absorption, emission and excitation spectra down to 4 K are reported. The number of Stark components is determined from low temperature spectra, and the symmetry of metal centers is described. The effect of the polymeric structure on spectroscopic properties is discussed. Electron–phonon coupling is considered and vibronic components are assigned based on IR and Raman data. Their intensities are related to the theory of vibronic transition probabilities. The electron transition probabilities are analyzed and the temperature dependence of the oscillator strength values are considered.

Słowa kluczowe

Sarcosine, Europium, X-ray, Spectroscopy, Cooperative interaction, Vibronic coupling

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