Optical spectroscopy and magnetic studies of dimeric europium capronate with 1,10-phenanthroline.

Autorzy

Janina Legendziewicz

Vera I. Tsaryuk

V. F. Zolin

E. Lebedeva

Małgorzata Borzechowska

Mirosław Karbowiak

Rok wydania

2001

Czasopismo

New Journal of Chemistry

Numer woluminu

25

Strony

1037-1042

DOI

10.1039/B101409A

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Luminescence, excitation of luminescence and absorption spectra of europium capronate crystals as well as vibrational IR and Raman spectra at 4.2, 77 and 293 K were obtained. Magnetic susceptibility measurements were carried out down to 1.7 K. Correlations between the spectral and magnetic properties and details of the structure of the title compound were studied. The crystal field parameters were calculated using the Stark splitting of the Eu^{3+} electronic levels. The oscillator strengths were evaluated. Changes in the spectra and magnetic susceptibility of $Eu(C_5H_{11}COO)_3Phen$ with increasing temperature from 4.2 to 293 K proves transformation of the crystal lattice. The subtle splitting of bands in the regions of the $^5D_0 \rightarrow {}^7F_1$ and $^5D_0 \rightarrow {}^7F_2$ transitions was revealed. Several possible causes of this phenomenon, including resonant vibronic interactions and/or the possible effect of ion-pair interactions, are discussed.

Adres publiczny

DOI https://doi.org/10.1039/B101409A

Strona internetowa wydawcy

https://www.rsc.org/