Dynamics of the excited state of the europium podant, [Eu $C_{36}H_{44}N_8O_5Cl_2$]Cl·5H_2O, in solid state and solutions.

Autorzy

Anders Dossing

Jerzy Sokolnicki

James P. Riehl

Janina Legendziewicz

Rok wydania

2002

Czasopismo

Journal of Alloys and Compounds

Numer woluminu

341

Strony

150-155

DOI

10.1016/S0925-8388(02)00054-3

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Heterocyclic ligands are common sensitizers for lanthanide ion emission under UV irradiation. Due to their specific emission properties, lanthanide podants are promising materials for medical applications. In this report we present spectroscopic and decay-time studies in the 360–77 K temperature range for an Eu(III) podand in the solid state, in solutions, and incorporated into a gel. The compound was synthesized and the luminescence and emission excitation spectra measured for the solid complex and dissolved in H_2O, MeOH and MeCN. Two peaks in the spectral region of the $^5D_0 \rightarrow {}^7F_0$ transition are interpreted in terms of the existence of two forms of the complex in aqueous and MeOH solutions, but only one in MeCN. The role played by the radiative and nonradiative paths in emission intensity are discussed. Dynamic processes in solutions have been considered and are correlated with earlier spectroscopic, and X-ray studies. The pressure and temperature dependence of the $^5D_0 \rightarrow {}^7F_0$ transition of the Eu(III) complex in water has been measured and thermodynamic parameters (ΔV, ΔH) have been determined.

Słowa kluczowe

Luminescence, Europium podant, Energy transfer, Emission and excitation spectra

Adres publiczny

https://doi.org/10.1016/S0925-8388(02)00054-3

Strona internetowa wydawcy

http://www.elsevier.com