Polymeric polynuclear systems of Pr, Yb, and Pr:Cu trichloroacetates; their spectroscopy and magnetism.

Autorzy

Janina Legendziewicz

Małgorzata Borzechowska

Grażyna Oczko

Jerzy Mroziński

Rok wydania

1998

Czasopismo

Spectrochimica Acta Part A-Molecular and Biomolecular Spectroscopy

Numer woluminu

A54

Strony

2197-2205

DOI

10.1016/S1386-1425(98)00138-3

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Heteronuclear copper–lanthanide compounds are the subject of the studies for the reason of their unusual structure features, optical, magnetic, catalytic properties and because of their potential application in superconducting ceramics. Synthesis, spectroscopic and magnetic characterisation of polymeric one-dimensional lanthanide (Pr, Yb) trichloroacetates (I, II) and heteronuclear $CuPr_2(Cl_3CCOO)_8 \cdot 6H_2O$ (III) single crystals were undertaken. Structures of I, II are isomorphic with erbium trichloroacetate and that of III with respective neodymium compound. In the structure of III the polymeric chain is built of dimers of two crystallographically independent types of $PrO_{8/9}$ polyhedra linked by carboxyl bridges. These dimers are separated by square planar coordinated cooper ions bridged to the lanthanide by four carboxyl groups and two water molecules. High resolution spectra down to 4 K were investigated and cooperative effects were analysed. Magnetic susceptibility measurements in the range 300–1.8 K were carried out. Optical and magnetic properties are discussed on the basis of X-ray data. Electron transition probabilities were calculated and cooperative interaction of ion-pairs coupled in polymeric chain was considered. Vibronic components were observed and assigned on the basis of Raman data.

Słowa kluczowe

Lanthanides, Spectroscopy, Pr, Cu, Yb, Magnetic moment, Magnetic susceptibility

Adres publiczny

https://doi.org/10.1016/S1386-1425(98)00138-3

Strona internetowa wydawcy

http://www.elsevier.com