a 2017 0106

The invention relates to coordination chemistry, in particular to the preparation of heterometallic dotriacontanuclear coordination compounds of manganese oxy-hydroxy-isobutyrates with lanthanides. These compounds have been the focus of attention of researchers in recent years, due to the growing interest in potential applications in the storage and processing of information or in molecular spintronics.

According to the invention, claimed are the tetrakis(μ_4-isobutyrato)-tetradecakis(μ_4-oxo)-hexakis(μ_3-isobutyrato)-dodecakis(μ_3-hydroxo)-bis(μ_3-oxo)-triacontakis(μ_2-isobutyrato)-bis(isobutyrato)-hexa-lanthanide(III)-hexadeca-manganese(III)-deca-manganese(II) compounds with the formula $[Mn_{26}Ln_6O_{16}(OH)_{12}(O_2CCH(CH_3)_2)_{42}]$, where Ln = Tb, Dy, Ho.

Also, claimed is a process for their preparation, comprising, in the first stage, interacting the manganese(II) isobutyrate with hexamethylenetetramine in a mixture of acetonitrile/ethanol, stirring the resulting solution, filtering it and obtaining crystals of the hexanuclear compound $[Mn_6O_2(O_2CCH(CH_3)_2)_{10}(C_2H_5OH)_{1.5}(hmta)(H_2O)_{1.5}]\cdot 0.5C_2H_5OH$, in the second stage, interacting the obtained hexanuclear compound with lanthanide nitrate ($Dy(NO_3)_3\cdot 6H_2O$, $Tb(NO_3)_3\cdot 6H_2O$ or $Ho(NO_3)_3\cdot 5H_2O$), dissolved in dichloromethane, in the presence of 2,4,6-tris- (2-pyridyl)-s-triazine dissolved in acetonitrile, stirring the resulting solution, filtering and aging it, to obtain dark-brown crystals of $[Mn_6O_2(O_2CCH(CH_3)_2)_{10}(CH_3CN)_2(H_2O)_2]\cdot H_2$, separating the obtained crystals by filtration, after which in the obtained filtrate are crystallized hexagonal yellow plates of $[Mn_{10}O_2(O_2CCH(CH_3)_2)_{18}(H_2O)_2]\cdot 0.33CH_2Cl_2$ and brown blocks of $[Mn_{26}Ln_6O_{16}(OH)_{12}(O_2CCH(CH_3)_2)_{42}]$, followed by their separation, washing and drying.

Claims: 2
Fig.: 2