A linear Cu^{II}-Gd^{III}-Cu^{II}-Gd^{III} complex derived from the assembly reaction of $[NaCu^{II}H_3L^{dpen(meso)}]$ and Gd^{III} $(thd)_3(H_2O)_2]$ (H_3L = *meso*-1,2-diphenyl-1-(2-oxybenzamido)-2-(2-oxy-3-ethoxybenzylideneamino)ethane and Hthd = 2, 2, 6, 6-tertra-methyl-3,5-heptanedione).

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Rok wydania

2011

Czasopismo

Polyhedron

Numer woluminu

30

Strony

1127-1133

DOI

10.1016/j.poly.2011.01.008

Kolekcja

Naukowa

Streszczenie

A linear tetranuclear Cu^{II}–Gd^{III}–Cu^{II}–Gd^{III} complex $[Cu^{II}L^{dpen(meso)}Gd^{III}(thd)_2(H_2O)]_2$ was synthesized from the reaction of $[NaCu^{II}L^{dpen(meso)}(DMF)]$ with $[Gd^{III}(thd)_3(H_2O)_2]$, and the structures and magnetic properties were investigated, where $H_3L^{dpen(meso)}$ = *meso*-1,2-diphenyl-1-(2-hydroxybenzamido)-2-(2-hydroxy-3-ethoxybenzylideneamino)ethane and Hthd = 2,2,6,6-tetramethyl-3,5-heptanedione. The Cu^{II} complex component $[NaCu^{II}L^{dpen(meso)}(DMF)]$ has a one-dimensional (1D) chain structure, in which the Na^+ ion is coordinated by two phenoxo and an ethoxy oxygen atoms of a Cu^{II} complex and an amido oxygen atom of the adjacent Cu^{II} unit to produce the 1D structure, in which the diphenylethylenediamine moieties have the array of $\{(1R,2S)\text{-Na-}(1S,2R)\}_{1\infty}$. The assembly reaction of the Cu^{II} and Gd^{III} components gave a linear complex with the array of Cu(1)–Gd(1)–Cu(2)–Gd(2), in which two diphenylethylenediamine moieties have the same chirality of (1*R*,2*S*)-(1*R*,2*S*) or (1*S*,2*R*)-(1*S*,2*R*). Two linear Cu(1)–Gd(1)–Cu(2)–Gd(2) units are linked by hydrogen bonds through two water molecules to give a cyclic structure with a center of symmetry. The temperature dependence of the magnetic susceptibilities and field-dependent magnetization revealed the ferromagnetic interaction between the Cu^{II} and Gd^{III} ions within the linear chain.

Słowa kluczowe

d–f Complex, Chiral aggregation, Ligand-complex, Assembly reaction, magnetism

Adres publiczny

https://doi.org/10.1016/j.poly.2011.01.008

Język

Angielski

Strona internetowa wydawcy

http://www.elsevier.com

Typ publikacji

Artykuł