

Chiral spin crossover nanoparticles and gels with switchable circular dichroism.

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Rok wydania

2015

Czasopismo

Journal of Materials
Chemistry C

Numer woluminu

3

Strony

4737-4741

DOI

10.1039/c5tc00161g

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

Spin crossover complexes represent spectacular examples of molecular switchable materials. We describe a new approach towards homochiral coordination nanoparticles of $[\text{Fe}(\text{NH}_2\text{trz})_3](\text{L-CSA})_2$ (NH_2trz = 4-amino-1,2,4-triazole, L-CSA = L-camphorsulfonate) that display an abrupt switch of chiral properties associated with a cooperative spin transition. This is an original method that generates stable and additive-free colloidal solutions of nanoparticles with a spin transition around room temperature. The introduction of a chiral anion to the coordination framework makes these nanoparticles display specific chiro-optical (circular dichroism) properties that are different in high and low spin states. We also illustrate here an effect of the "chiral memory" which is caused by the hysteretic spin transition. In addition, a bistable chiral composite supramolecular system – a $[\text{Fe}(\text{NH}_2\text{trz})_3](\text{L-CSA})_2\text{-CHCl}_3$ gel – is described here.

Adres publiczny

<http://dx.doi.org/10.1039/c5tc00161g>

Strona internetowa wydawcy

<https://www.rsc.org/>

Plik został wygenerowany dnia 2026-10-05 11:39:37

Adres w repozytorium <https://old.chem.uni.wroc.pl/pl/repozytorium/9gWwDNw>.