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# Slow magnetic relaxation in cobalt(II) field-induced single-ion magnets with positive large anisotropy.

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Rok wydania

2018

Czasopismo

Inorganic Chemistry

Numer woluminu

57

Strony

12740-12755

DOI

10.1021/acs.inorgchem.8b01906

Kolekcja

Naukowa

Język

Angielski

Streszczenie

Three pentacoordinate complexes of the type [Co(*pypz*)$X_2$], where *pypz* is a tridentate ligand 2,6-bis(pyrazol-1-yl)pyridine and X = $Cl^-$ (**1**), $NCS^-$ (**2**), and $NCO^-$ (**3**), have been synthesized, and their structures have been determined by X-ray analysis. The DC magnetic data show a sizable magnetic anisotropy, which was confirmed by high-field high-frequency electron paramagnetic resonance (HF EPR) measurements. Well-resolved HF EPR spectra of high spin cobalt (II) were observed over the microwave frequency range 100–650 GHz. The experimental spectra of both complexes were simulated with axial *g* tensor components, a very large positive *D* value, and different *E*/*D* ratios. To determine the exact *D* value for **2** (38.4 $cm^{-1}$) and **3** (40.92 $cm^{-1}$), the far-infrared magnetic spectroscopy method was used. Knowledge of the zero field splitting parameters and their signs is crucial in interpreting the single-molecule magnet or single chain magnet behavior. The AC susceptibility data confirm that these complexes exhibit a slow magnetic relaxation under small applied DC field with two (**1** and **3**) or three (**2**) relaxation modes.

Adres publiczny

http://doi.org/10.1021/acs.inorgchem.8b01906

Strona internetowa wydawcy

https://www.acs.org/content/acs/en.html

## Typ publikacji

Artykuł

Plik został wygenerowany dnia 2026-11-14 02:26:29

Adres w repozytorium https://old.chem.uni.wroc.pl/pl/repozytorium/alUhGoA.