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Research paper

Slow Magnetic Relaxation in Two Octahedral Cobalt(II) Complexes with Positive Axial Anisotropy

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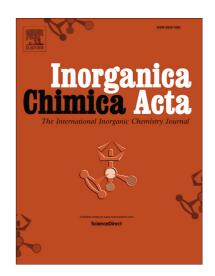
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Slow Magnetic Relaxation in Two Octahedral Cobalt(II)

Complexes with Positive Axial Anisotropy

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Abstract: Two mononuclear Co(II) complexes $[Co(L)_4(NO_3)_2]$ 3-phenylpyrazole for 1 and 4-methylpyridine for 2) featuring distorted octahedral geometry were prepared and structurally characterized by X-ray crystallographic analyses. Direct-current magnetic and high-frequency/field electron paramagnetic resonance measurements reveal that both complexes have the large and positive D values with the non-negligible transverse anisotropy (E). Slow magnetic relaxation effects were observed under the applied direct-current field in 1 and 2 by dynamic alternative-current magnetic susceptibility measurements, which provide two interesting examples of six-coordinate Co(II)-based single ion magnets constructed by nitrate groups and nitrogen heterocyclic compounds in mono-dentate coordination modes.

Keywords: Cobalt; magnetic properties; single-ion magnet; EPR spectroscopy

1. Introduction

The field of single molecule magnets (SMMs) based on single paramagnetic 3d ion has invoked much research, and have been rapidly expanding over the past



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