

Accepted Manuscript

Chemical trend on the lanthanide-radical exchange coupling

Takayuki Ishida, Takeshi Nakamura, Takumi Kihara, Hiroyuki Nojiri

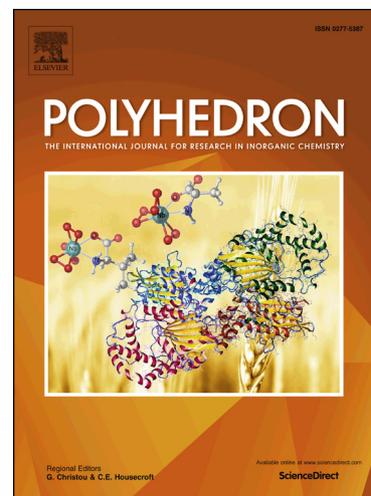
PII: S0277-5387(17)30185-7
DOI: <http://dx.doi.org/10.1016/j.poly.2017.03.008>
Reference: POLY 12520

To appear in: *Polyhedron*

Received Date: 16 January 2017
Revised Date: 23 February 2017
Accepted Date: 6 March 2017

Please cite this article as: T. Ishida, T. Nakamura, T. Kihara, H. Nojiri, Chemical trend on the lanthanide-radical exchange coupling, *Polyhedron* (2017), doi: <http://dx.doi.org/10.1016/j.poly.2017.03.008>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Chemical trend on the lanthanide-radical exchange coupling

Takayuki Ishida^{a,*}, Takeshi Nakamura^a, Takumi Kihara^b, Hiroyuki Nojiri^b

^aDepartment of Engineering Science, The University of Electro-Communications, Chofu, Tokyo 182-8585, Japan and ^bInstitute for Materials Research, Tohoku University, Katahira, Sendai 980-8577, Japan; E-mail: takayuki.ishida@uec.ac.jp (T.I.)

ABSTRACT

From the high-frequency electron paramagnetic resonance spectra on $[\text{Ln}(\text{hfac})_3(\text{TMIO})_2]$ ($\text{Ln} = \text{Tb}, \text{Dy}$; $\text{TMIO} = 1,1,3,3\text{-tetramethylisindolin-2-oxyl}$; $\text{hfac} = 1,1,1,5,5,5\text{-hexafluoropentane-2,4-dionate}$) the level-crossing fields of the radical signal of the Tb and Dy complexes were determined to be 21.9(3) and 20(2) T, respectively. The observation of a single signal is consistent with the two-fold molecular symmetry. The coupling constants were evaluated, giving $J_{\text{Tb-rad}}/k_{\text{B}} = -4.47(4)$ K and $J_{\text{Dy-rad}}/k_{\text{B}} = -3.2(4)$ K. Since the exchange coupling constant in $[\text{Gd}(\text{hfac})_3(\text{TMIO})_2]$ has already been determined to be $J_{\text{Gd-rad}}/k_{\text{B}} = -12.5(4)$ K from the magnetic susceptibility measurements, the lanthanide-dependence on $|J_{\text{Ln-rad}}|$ was concluded as $|J_{\text{Gd-rad}}| > |J_{\text{Tb-rad}}| > |J_{\text{Dy-rad}}|$ in this series.

Keywords: lanthanide; lanthanoid, rare earth metal; exchange interaction; electron paramagnetic resonance; single-molecule magnet

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات