

# Author's Accepted Manuscript

Exploring the effect of remote substituents and solution structure on the luminescence of three lanthanide complexes

Manuel Tropiano, Octavia A. Blackburn, James A. Tilney, Leila R. Hill, Thomas Just Sørensen, Stephen Faulkner



PII: S0022-2313(15)00353-1  
DOI: <http://dx.doi.org/10.1016/j.jlumin.2015.06.035>  
Reference: LUMIN13430

To appear in: *Journal of Luminescence*

Received date: 5 March 2015  
Revised date: 8 June 2015  
Accepted date: 23 June 2015

Cite this article as: Manuel Tropiano, Octavia A. Blackburn, James A. Tilney, Leila R. Hill, Thomas Just Sørensen and Stephen Faulkner, Exploring the effect of remote substituents and solution structure on the luminescence of three lanthanide complexes, *Journal of Luminescence*, <http://dx.doi.org/10.1016/j.jlumin.2015.06.035>

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 galley proof before it is published in its final citable 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.

# Exploring the effect of remote substituents and solution structure on the luminescence of three lanthanide complexes

Manuel Tropiano,<sup>a</sup> Octavia A. Blackburn,<sup>a</sup> James A. Tilney,<sup>a</sup> Leila R. Hill,<sup>a</sup> Thomas Just Sørensen<sup>a,b,\*</sup> and Stephen Faulkner<sup>a,\*</sup>

- a. Chemistry Research Laboratory, Oxford University, 12 Mansfield Road, Oxford OX1 3TA, UK, e-mail: stephen.faulkner@chem.ox.ac.uk, telephone: +44 1865 285 148.
- b. Nano-Science Center & Department of Chemistry, University of Copenhagen, Universitetsparken 5, 2100 København Ø, Denmark, e-mail: TJS@chem.ku.dk, telephone: +45 35 32 02 13, fax: +45 35 32 02 14.

## Keywords

Kinetically inert lanthanide complexes; lanthanide emission; sensitised emission; lanthanide solvation; solution structure;

## Research Highlights

- Effects of remote substituents on the luminescence from kinetically inert lanthanide complexes
- Molecular structure rather than chromophore density determines outcome of lanthanide sensitization
- Kimura's and Horrocks' approach to determine lanthanide solvation is revisited
- Solvent can significantly change sensitization pathways in multinuclear lanthanide complexes
- Increasing chromophore density may reduce the amount of lanthanide luminescence observed

## Abstract

Sensitized luminescence from trivalent lanthanide ions relies on an appropriate match of energy between the sensitizer's excited state (triplet or singlet) and the lanthanide excited state manifold and an efficient mechanism of energy transfer between the two. Here, the effect of remote substituents on the luminescence properties of a series of related lanthanide complexes has been investigated. The sensitized lanthanide centered emission is found not to occur following excitation of all chromophores in all systems, and it is shown that only the most structurally congested of the systems investigated exhibited pronounced solvatochromism.

Download English Version:

<https://daneshyari.com/en/article/5398810>

Download Persian Version:

<https://daneshyari.com/article/5398810>

[Daneshyari.com](https://daneshyari.com)