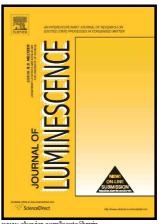
## Author's Accepted Manuscript

Synthesis of pyrenocrown ethers as fluorescent sensors and their recognition ability of metal ions

Hajime Maeda, Kenji Hirose, Masahito Segi



www.elsevier.com/locate/jlumin

PII: S0022-2313(18)30407-1

DOI: https://doi.org/10.1016/j.jlumin.2018.08.032

Reference: LUMIN15830

To appear in: Journal of Luminescence

Received date: 5 March 2018 Revised date: 28 June 2018 Accepted date: 2 August 2018

Cite this article as: Hajime Maeda, Kenji Hirose and Masahito Segi, Synthesis of pyrenocrown ethers as fluorescent sensors and their recognition ability of metal ions, *Journal of Luminescence*, https://doi.org/10.1016/j.jlumin.2018.08.032

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.

ACCEPTED MANUSCRIPT
Synthesis of pyrenocrown ethers as fluorescent sensors and their recognition ability of metal

ions

Hajime Maeda\*, Kenji Hirose, Masahito Segi

Division of Material Chemistry, Graduate School of Natural Science and Technology, Kanazawa

University, Kakuma-machi, Kanazawa, Ishikawa 920-1192, Japan

**Abstract** 

Novel pyrenocrown ethers having different ring sizes were synthesized, and change of fluorescence

spectra was investigated upon addition of metal ions. By the addition of Li<sup>+</sup> and Na<sup>+</sup> ions to 10<sup>-2</sup> M

CH<sub>3</sub>CN solutions of pyreno-15-crown-5 ether (3), excimer/monomer ratio decreased with 3-4 nm

longer wavelength shift. Upon addition of Mg<sup>2+</sup> and Ba<sup>2+</sup> ions to the solution of 3, excimer

emission increased with 11-25 nm longer wavelength shift. On the other hand, when these metal

ions were added to pyreno-18-crown-6 ether (4), the excimer/monomer ratio monotonically

decreased. Addition of Pb<sup>2+</sup> ion to solutions of 3 and 4 caused dramatic decrease of both monomer

and excimer fluorescence intensity. Inspection of these results indicates that 3 forms 1:1 and 2:1

complexes with respective monovalent and divalent metal ions, whereas 4 forms 1:1 complexes

with both monovalent and divalent metal ions. The 1:1 complexes of 3 with monovalent and

divalent metal ions emit respective excimer and monomer fluorescence, whereas the 2:1 complexes

of 3 emit excimer fluorescence. Monotonical decrease of fluorescence intensity by the addition Pb<sup>2+</sup>

is attributed to heavy atom effect.

1

## Download English Version:

## https://daneshyari.com/en/article/7839674

Download Persian Version:

https://daneshyari.com/article/7839674

<u>Daneshyari.com</u>