



# Library Indian Institute of Science Education and Research Mohali



**DSpace@IISERMohali (/jspui/)**  
**/ Publications of IISER Mohali (/jspui/handle/123456789/4)**  
**/ Research Articles (/jspui/handle/123456789/9)**

Please use this identifier to cite or link to this item: <http://hdl.handle.net/123456789/2161>

|                         |   |
|-------------------------|---|
| Title:                  | Luminescent Lanthanide-Based Probes for the Detection of Nitroaromatic Compounds in Water   |
| Authors:                | Singh, Sandhya (/jspui/browse?type=author&value=Singh%2C+Sandhya)<br>Das, Prasenjit (/jspui/browse?type=author&value=Das%2C+Prasenjit)<br>Mandal, S.K. (/jspui/browse?type=author&value=Mandal%2C+S.K.)   |
| Keywords:               | Mixed pyridyl-carboxylate ligand<br>Picolinate<br>Flexible linear spacer<br>Chromophores  |
| Issue Date:             | 2019  |
| Publisher:              | American Chemical Society   |
| Citation:               | ACS Omega, 4(3), pp.5283-5292.  |
| Abstract:               | <p>A new mixed pyridyl-carboxylate ligand with two picolinate chromophores and a flexible linear spacer, potassium 2,2'-(butane-1,4-diylbis(pyridin-2-ylmethyl)azanediyl)diacetate (K2bpbpd), which is obtained in high yield and spectroscopically characterized, has been utilized to make new lanthanide complexes, namely, <math>[Ln(bpbpd)(H_2O)_2(NO_3)] \cdot xH_2O</math>, where <math>Ln = Tb</math> (1) and <math>x = 6</math>, <math>Ln = Sm</math> (2) and <math>x = 7</math>, and <math>Ln = Dy</math> (3) and <math>x = 7</math>. These complexes have been extensively characterized by various spectroscopic techniques (UV-vis and Fourier transform infrared spectroscopy), elemental analyses, thermogravimetric analysis, field emission scanning electron microscopy, and powder X-ray diffraction. These show very intense characteristic luminescence features that confirm the antenna effect of the ligand on the metal center. These complexes have been utilized for the detection of various nitroaromatic compounds. Among these three complexes, 1 is found to be the best for the selective sensing of 2,4,6-trinitrophenol in water with a detection limit of <math>(0.35 \pm 0.05)</math> ppm. Its Stern-Volmer constant, <math>KSV [(5.48 \pm 0.1) \times 10^4 M^{-1}]</math>, is one of the highest among similar sensors reported so far.</p> |
| URI:                    | <a href="https://pubs.acs.org/doi/10.1021/acsomega.9b00223">https://pubs.acs.org/doi/10.1021/acsomega.9b00223</a><br>( <a href="https://pubs.acs.org/doi/10.1021/acsomega.9b00223">https://pubs.acs.org/doi/10.1021/acsomega.9b00223</a> )<br><a href="http://hdl.handle.net/123456789/2161">http://hdl.handle.net/123456789/2161</a> ( <a href="http://hdl.handle.net/123456789/2161">http://hdl.handle.net/123456789/2161</a> )   |
| Appears in Collections: | Research Articles (/jspui/handle/123456789/9)   |

## Files in This Item:

| File   | Description | Size       | Format               |   |
|--|-------------|------------|----------------------|---|
| Need to add pdf.odt<br>(/jspui/bitstream/123456789/2161/1/Need%20to%20add%20pdf.odt) |             | 8.63<br>kB | OpenDocument<br>Text | <a href="#">View/Open (/jspui/bitstream/123456789/2161/1/Need%20to%20add%20pdf.odt)</a> |

[Show full item record \(/jspui/handle/123456789/2161?mode=full\)](#)

[Statistics \(/jspui/handle/123456789/2161/statistics\)](#)

Items in DSpace are protected by copyright, with all rights reserved, unless otherwise indicated.