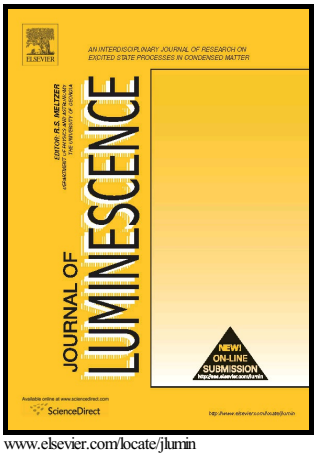

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PII: S0022-2313(18)30461-7
DOI: https://doi.org/10.1016/j.jlumin.2018.06.046
Reference: LUMIN15708

To appear in: *Journal of Luminescence*

Received date: 13 March 2018
Revised date: 29 May 2018
Accepted date: 15 June 2018

Cite this article as: Tatyana V. Balashova, Andrei A. Kukinov, Anatoly P. Pushkarev, Vasily A. Ilichev, Ilya V. Taydakov, Eugenya A. Varaksina, Roman V. Rumyantcev, Georgy K. Fukin and Mikhail N. Bochkarev, Structural and luminescent properties of homo- and heterometallic complexes of La, Li and Na with 2-(2-benzoxyazol-2-yl)phenolate ligands, *Journal of Luminescence,* https://doi.org/10.1016/j.jlumin.2018.06.046

Structural and luminescent properties of homo- and heterometallic complexes of La, Li and Na with 2-(2-benzoxyazol-2-yl)phenolate ligands.

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Keywords: lanthanum; lithium; sodium; 2-(2-benzoxyazol-2-yl)phenolate; complexes; structure; fluorescence; phosphorescence; excimer; exciplex

a b s t r a c t

A series of homo and heterometallic La, Li and Na complexes with 2-(2-benzoxyazol-2-yl)phenolate (L) ligands were synthesized using $M[N(SiMe_3)_2]_3$ (M = La, Li, Na) or $La(Cp)_3$ as starting materials: $La_2(L)_6$ (**1**), $La_2(L)_6$(bipy) (**2**), $La(L)_2Cp(DME)$ (**3**), $La_2Li(L)_7$ (**4**), Li(L) (**5**), Na(L) (**6**). Photoluminescent (PL) properties of these compounds, staring phenol H(L) as well as previously obtained complex $LaNa(L)_4(DME)_2$ (**7**) were studied at 300 and 77 K. Molecular structure of **2**, **3** and **4** were determined by X-ray analysis. All the compounds in THF solution at 300 K upon UV excitation (370 nm) revealed a bright fluorescence in the range 430-460 nm and moderate phosphorescence as a shoulder at about 500 nm. The total quantum yield (QY) is 1-35%. At 77 K all lanthanum compounds (except **3)** in THF solution exhibit weak or moderate fluorescence but intense phosphorescence (τ 3.5 – 95.8 ms). The PL spectra of solid samples at 300 K strongly differ from those of solutions, apparently due to the effects of crystal packing, the shape and size of the crystals. The emission of H(L) is most intensive but the PL **1** has lowest efficiency. It is assumed that phosphorescence occurs from excimers and exciplexes, the formation of which in the compounds studied has been confirmed by X-ray diffraction analysis.

1. Introduction