PHOTOLUMINESCENT LANTHANIDE CARBOXYLATES WITH ANTIOXIDANT PHENOL FRAGMENT

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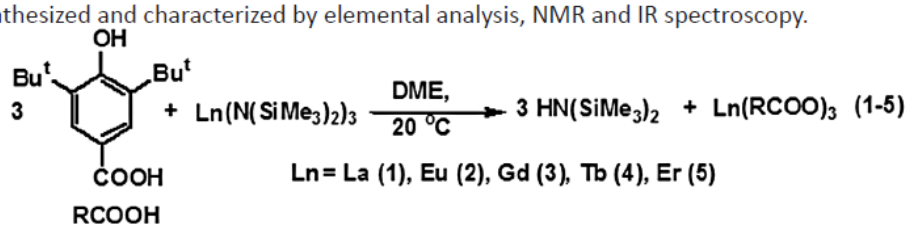
The lanthanide compounds possess luminescent properties and can be used in medicine as biomarkers. It should be noted that lanthanide compounds have nephrotoxic effect. In order to decrease the toxicity of lanthanide compounds it is worth to introduce the antioxidant organic group into the molecule. A series of lanthanide carboxylates was synthesized and characterized by elemental analysis, NMR and IR spectroscopy.



According to mass spectrometry data carboxylates **1** and **2** are dimers. The photoluminescent properties of **1**-**5** were investigated. It was found that in THF solution RCOOH exhibits virtually no luminance, however, the lanthanide complexes **1**-**5** display intense ligand-centered emission as a single broad band peaked at 398 nm. In the case of **2** (Eu) short-waived excitation at 300 nm causes a weak emission of Eu^{3+} ion at 618 nm. The spectrum of **4** (Tb) shows the narrow bands of $^5D_4 \rightarrow {}^7F_6$, $^7F_5$ transitions at 490 and 550 nm which are characteristic for Tb^{3+} ion. The antioxidant activity of complexes was investigated by CUPRAC [Cu(II) → Cu(I)] and DPPH methods. It is shown that the activity of compounds **1**-**5** exceeds that one of RCOOH.

The financial support from RFBR, Grant 14-03-00611 is gratefully acknowledged.