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Thiacalix[4]monocrowns with terpyridine functional groups as new structural units for luminescent polynuclear lanthanide complexes

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Abstract

© 2016 © 2016 A.E. Arbuzov Institute of Organic and Physical Chemistry. The synthesis and structure of thiacalix[4]monocrowns in 1,3-alternate configuration substituted by terpyridyl fragments on the lower rim are being discussed. It has been shown that the number of oxyethylene units in oligoethylene glycol chain affects the distribution of the yields of the cross-linking products leading to either thiacalix[4]monocrowns or bithiacalix[4]arenes. Their complexation ability towards alkali metal and lanthanide ions has been studied using liquid extraction and MALDI TOF MS, in addition to luminescent properties of ligands and their lanthanide complexes. The NMR titration data discovered the participation of both crown ether and terpyridyl fragment in the coordination of lanthanide cations. The fluorescent titration showed the nonlinear emission response to the amount of lanthanide ions.

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Keywords

lanthanides, luminescence, terpyridines, Thiacalix[4]monocrowns