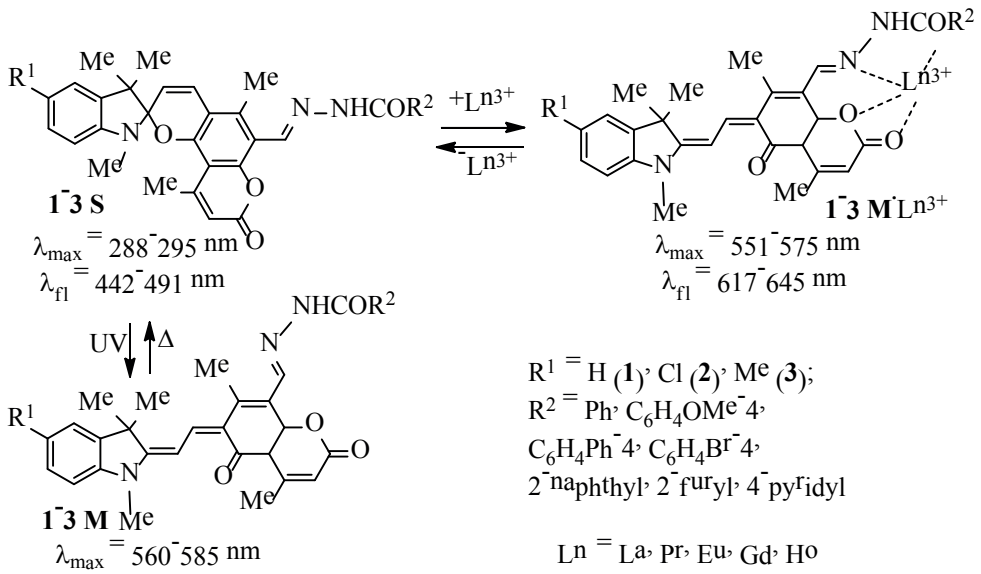
PHOTOCHROMIC SPIROPYRAN-BASED RECEPTORS FOR LANTHANIDE IONS

Dubonosov A.D.,[a] Bren V.A.,[b] Nikolaeva O.G.[b]

[a]*Federal Research Centre "Southern Scientific Centre of the Russian Academy of Sciences", Stachka prospekt 194/2, Rostov-on-Don, 344090, Russia, e-mail: aled@ipoc.sfedu.ru*
[b]*Institute of Physical and Organic Chemistry, Southern Federal University, Rostov-on-Don, Russia*

Spiropyrans (SPP) are a type of organic photochromes undergoing intensive research.[1,2] The introduction of substituents capable of forming colored complexes with metal cations into the 2H-pyran part of SPP enables their use in chemosensorics. We have synthesized and studied photo- and ionochromic properties of coumarin SPP 1-3 S, which contain terminal carbohydrazide substituents.



UV irradiation of their solutions initiate rearrangement into a colored merocyanine form 1-3 M. In the presence of lanthanide cations, the obtained SPP exhibit a "naked-eye" chromogenic effect, accompanied by a change of the solution color from yellow to violet. Deep colored complexes 1-3 M.Ln3+ display fluorescence at 617-645 nm.

References
1. Klajn, R. Chem. Soc. Rev. 2014, 43, 148.
2. Metelitsa, A.V.; Nikolaeva, O.G.; Cheprasov, A.S., Karlutova, O.Yu., Burtseva, A.A., Dubonosov, A.D.; Bren, V.A.; Minkin, V.I. J. Photochem. Photobiol. A 2016, 321, 12.

The work was performed within the framework of the basic part of the State Assignment of RF in the Field of Scientific Research (Nos. 4.6497.2017/8.9 and 4.5593.2017/6.7) and the State Assignment of the SSC RAS (No. 01201354239).