

**The 5th International Symposium  
“Molecular photonics”  
dedicated to academician A.N. Terenin**  
May 6-7, 2021, St. Petersburg, Russia



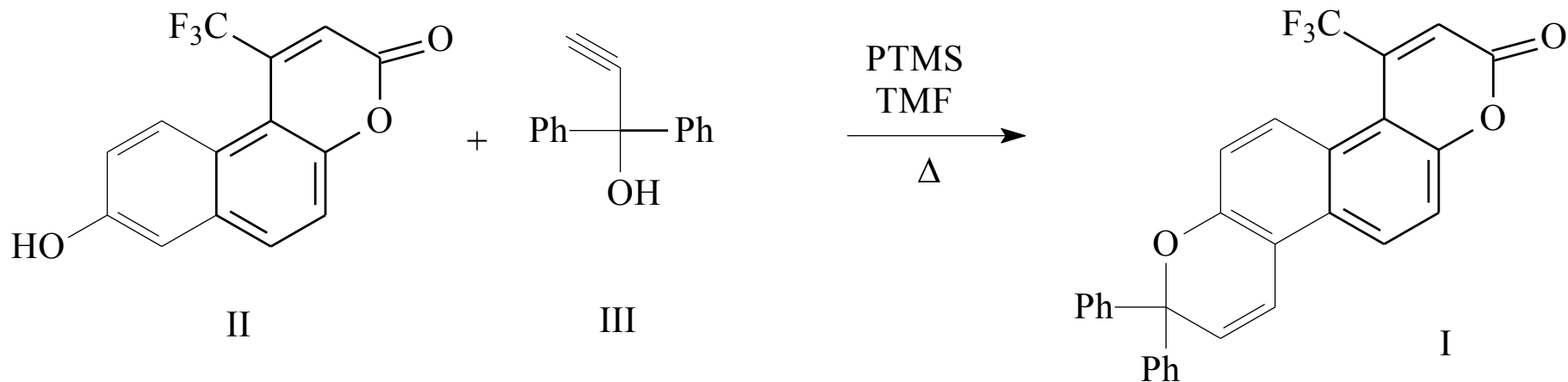
# Hybrid coumarino-pyrane photochromic compounds with reversible modulation of fluorescence

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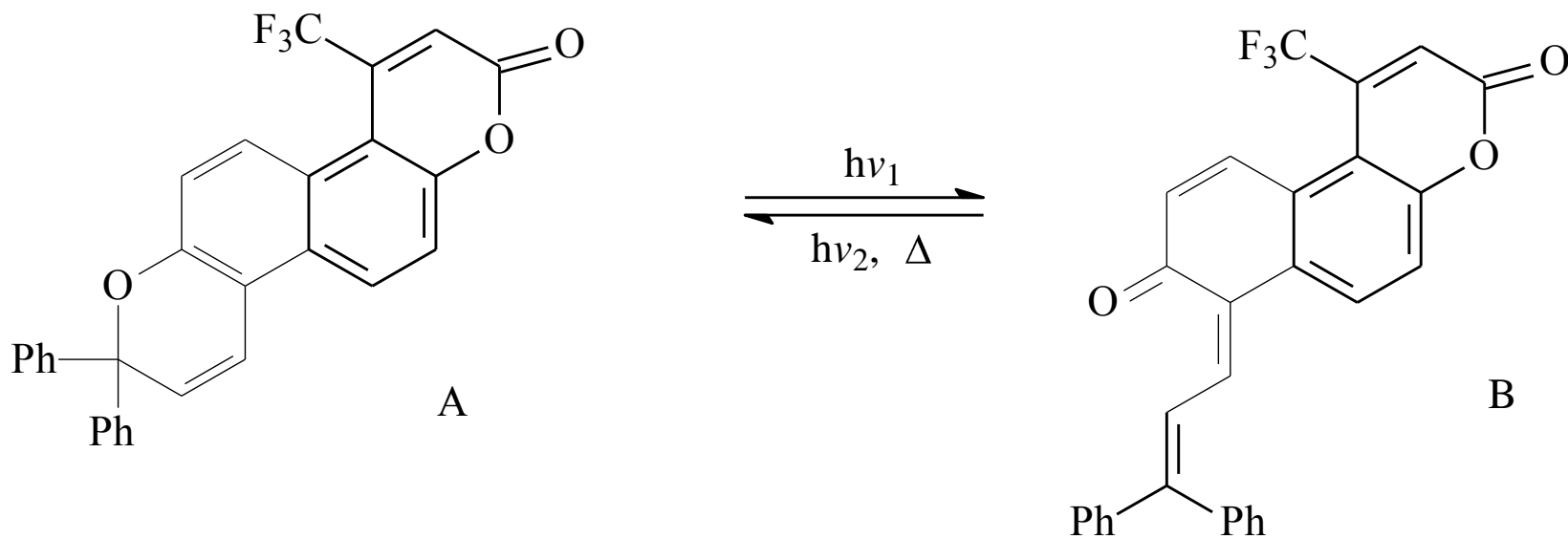
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Scheme of 4-trifluoromethyl-8,8-diphenylchromeno[6,5-f]chromen-2H(8H)-one (**I**) synthesis through the condensation 4-trifluoromethylhydroxybenzocoumarin (**II**) with 1,1-diphenyl-2-propyn-1-ol (**III**) which was carried out in presence of catalytic pyridinium trifluoromethansulfonat (PTMS) and trimethyl orthoformate (TMF).

# The mechanism of photochromic transformations of the pyran (I)

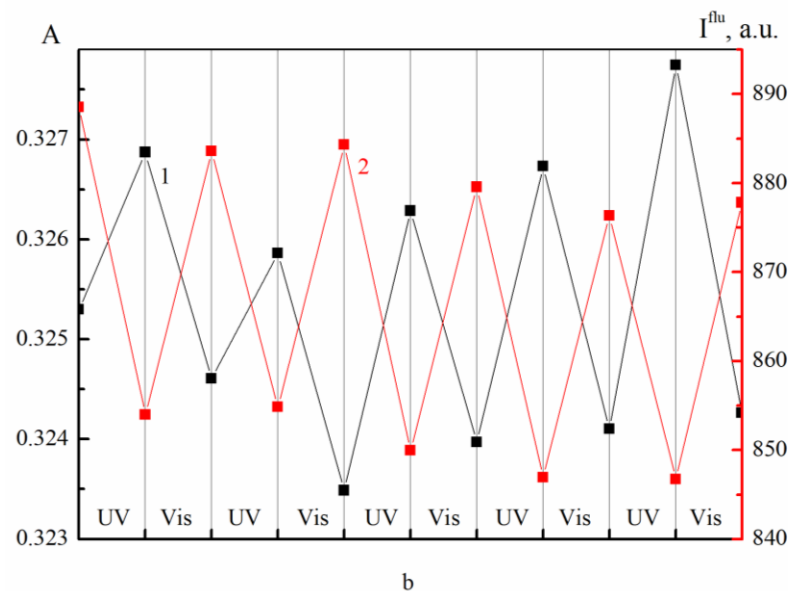
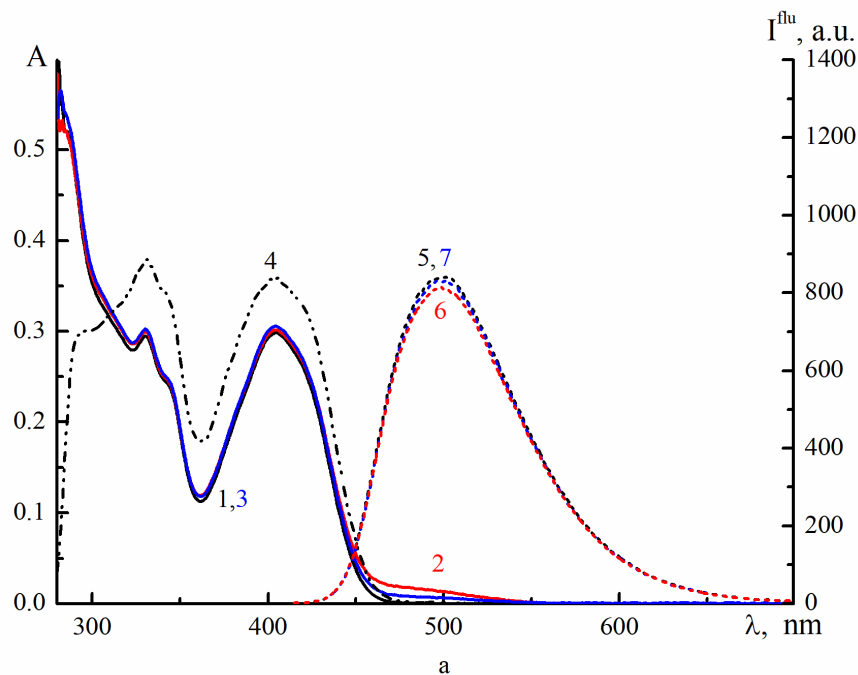


$$\lambda_A^{\text{abs}} = 404 \text{ nm}$$

$$\epsilon^{404\text{nm}} = 7460 \text{ l} \cdot \text{mol}^{-1} \cdot \text{cm}^{-1}$$

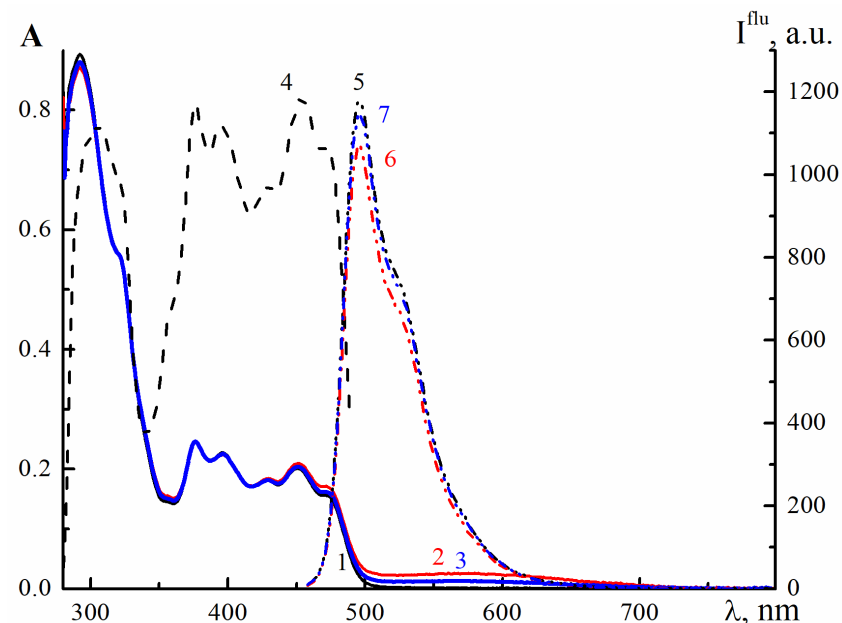
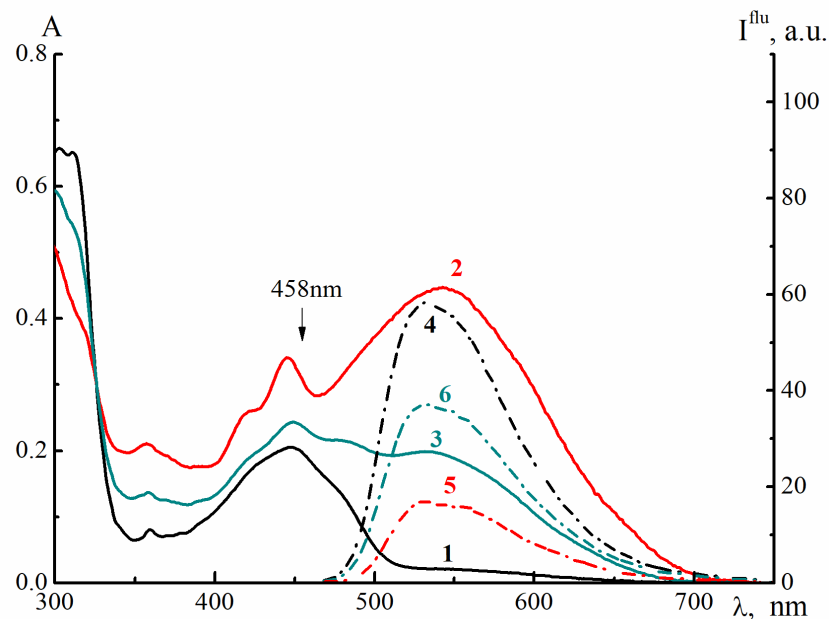
$$\lambda_A^{\text{flu}} = 501 \text{ nm}$$

$$\lambda_B^{\text{abs}} = 467 \text{ nm}$$



- a) Absorption spectrum (1-3), fluorescence spectrum (5-7) and fluorescence excitation spectrum at 501 nm (4) before (1,4,5), under (2,6) UV-irradiation and under dark relaxation (3,7) in toluene
- b) Change in absorption (1) and modulation of the fluorescence intensity (2) under cyclic irradiation of UV and visible (Vis) light

We have previously studied four hybrid compounds with luminescent properties. It was shown that compounds with high luminescence intensity show insignificant photochromic changes, and vice versa.



A. Gorelik, O. Venidictova, A. Ayt, V. Barachevsky. Synthesis, photochromic and fluorescent properties of perinaphthalenon derivatives. Abstracts of XXVth IUPAC Symposium on Photochemistry, July 13 - 18, 2014, Bordeaux, France, P192

Gorelik A.M., Venidiktova O.V., Ait A.O., Barachevsky V.A., Photochromic hybrid compounds with photoinduced modulation of fluorescence. Materials of 13 Russian Conference "Technologies and materials for extreme conditions" ICAR RAS 2018; 28-34

# Thanks for attention

This work was supported by the Ministry of Science and Higher Education within the State assignment FSRC «Crystallography and Photonics» RAS