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UNUSUAL PRODUCT IN THE PHOTOLYSATE OF 2-AZIDOXANTHONE

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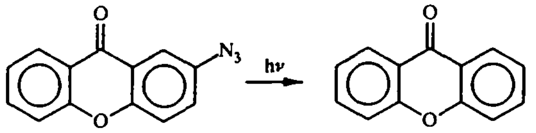
In studying the possibility of using azides based on xanthone as initiators of radical polymerization and finding the effect of "dark polymerization" [1], we investigated photolysis of 2-azidoxanthone in methanol, ethanol, and DMF. We showed that in addition to the predicted products of photolysis such as 2-aminoxanthone, 2-nitroxanthone, products of ring expansion, and solvent capture, an unsubstituted xanthone is present in the photolysate:



Although no more than 5% is formed in alcohol solutions, up to 40% is formed in photolysis in a solution of DMF!

Photolysis of 2-azidoxanthone was conducted in 0.01 M solutions of alcohols and DMF in quartz cuvettes by illuminating them for 1.5-2 h with unfiltered light from a DRSh-1000 lamp. Liquid chromatography was performed on the photolysate with subsequent recording of the UV spectra of all emerging products, and chromatography-mass spectrometry was also performed. Solutions of possible products of photolysis of 2-azidoxanthone were investigated in similar conditions as a control. Based on the times of coming out of the column, the UV and mass spectra, the presence of an unsubstituted xanthone was unambiguously demonstrated in the photolysate; its formation was absolutely not obvious, since homolytic rupture of a C–N bond is required and no explanation has yet been advanced.

Among others, the mass spectrum of xanthone exhibits an intense peak of a molecular ion with *m/z* 196, an intense peak of a fragmentary ion with *m/z* 168 arising as a result of elimination of CO, an intense peak with *m/z* 139, and not very intense peaks with *m/z* 113, 98, 84, 69, 63, 50, 39.

REFERENCE

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