

Nanooptics and photonics

Novel methacrylic polymers with styrylquinoline side-group as optically active moiety

O.Kharchenko*, O.Krupka, V.Smokal, O.Kolendo

Department of Macromolecular Chemistry, Taras Shevchenko National University of Kyiv, 60 Volodymyrska Street, Kyiv, Ukraine, 01033

**e-mail: oksana_kharchenko@ukr.net*

Photoactive polymers with nonlinear optical properties have attracted considerable attention owing to their potential applications including high-density optical data storage, optical image processing, biological imaging, signal processing, and display technologies. It is well known that for such materials potentially high NLO response [1,2] is the necessary characteristic. In the present work, we aim to synthesize and investigate novel polymer materials as perspective candidates for photonic applications. It was found that the photochemical excitation of the styrylquinoline containing compound induces a *trans-cis* isomerization, and styrylquinoline derivatives have been characterized as compound with non-repeatable *trans-cis* isomerisation process. The common structures of synthesized methacrylic monomers and polymers is representing below:

where $n=3$, $m=1$, $R = -OCH_3, -H, -F, -Cl, -Br, -NO_2$

The novel nonlinear optical (NLO) chromophores with styrylquinoline moiety were synthesized and their structures determined by UV- and HNMR-spectroscopies. The polymerization was carried out in DMF with AIBN as initiator.

The products of polymerization were characterized by 1H NMR, UV-VIS, GPC, DSC.

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2. Beltrania T., BoËsch M., Centorea R., Conciliob S. Nonlinear optical properties of polymers containing a new azophenylbenzoxazole chromophore // *Polymer*. – 2001. – **42**. – P. 4025–4029