

Nanooptics and photonics

Design, synthesis, and properties of styrylquinoline polymers

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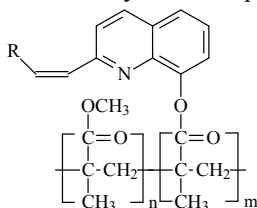
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Nonlinear optics is given increasing attention due to its wide application in the area of laser technology, optical communication and data storage. The popularity of investigations for new materials with NLO properties can be explained by searching the solution problems creation nanomaterials with potential application in such fields as optical devices, photonic circuits, and environmental sensor as well as in medical diagnostics. Intense researches have been carried out in connection with the creation practical optical devices that have not the deficiencies of conventional technologies [1]. The investigation of nanostructures based on organic molecules has actual scientific and practical interest for the specialists in various fields of knowledge. The polymers films based on photo-active organic compounds can be use for creation devices that can absorb light energy and convert into electric energy. Furthermore, organic nanostructures which contain chromophores are widely using for recording and storing information in micro- and nano optoelectronic for designing sensors. In our research we are using styrylquinoline chromophores as optically active moiety of nanostructures.

For creation new polymer materials with predicted properties were synthesized polymers with 2-styrylquinolines chromophores.

The common structure of synthesized polymers represented below:



where $n=1$, $m=3$

$R = \text{Ph}, \text{Ph-NO}_2$

The polymerization was carried out in DMF with AIBN as initiator. The product of polymerization was characterized by ¹H NMR, UV-VIS, DSC, GPC.

1. Suresh S., Arivuoli D. Nanomaterials for nonlinear optical (NLO) applications: a review // Rev. Adv. Mater. Sci.-2012.-**30**.-P. 243-253.