

Synthesis and nonlinear optical properties of polyether polyols Of azochromophore groups with different structures

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Abstract

The work deals with the synthesis and study of nonlinear optical properties of reactive polyether polyols based on the diglycidyl ether of bisphenol-A and *n*-aminobenzoic acid with azochromophores of different structure.

Introduction of azochromophores into the side chain of the oligomer was carried out in the course of the esterification reaction in two ways: one-step or two-step. In the first case, we first prepared aniline-containing oligomer, and then performed azo cross-linking reaction to obtain the oligomer having an azochromophore. In the second case, functionalization of the reactive oligomer was carried out directly by hydroxyl-containing azochromophore. The structure of oligomers is confirmed by physicochemical methods of research. The presence of reactive hydroxyl groups in the chain of synthesized oligomer allows to obtain cross-linked polymers, using diisocyanates as a cross-linking agent.

Using fluid distribution method on rotating thin films were produced with the thickness of 200-300 nm. To obtain a material with quadratic nonlinear optical activity we conducted electrical treating of films in the corona discharge. The method of second harmonic generation was used to measure nonlinear optical coefficients of the synthesized materials.