DYES DIFFUSION INVESTIGATION IN THE ELASTIC POLYMER FILMS

S. A. Volyanyuk, V. I. Bezrodnyi, E. A. Tikhonov

Institute of Physics Nat. Acad. Sci. of Ukraine
(*46. Nauky Prosp., Kyiv 03028, Ukraine)*

S u m m a r y

Authors of this work study the dyes diffusion in the polyurethaneacrylate films in connection with the elaboration on mentioned basis the lasers cavity gradient elements – the soft amplitude diaphragms for selection and formation of the spatial profile of the transversal cavity modes. It was revealed the dye diffusion coefficients decrease in time and it was shown the observed reduction agrees with of the diffusion dispersion model taking into account the traps. The arrenius temperature dependence of the coumarine diffusion coefficients in the polyurethaneacriyates films is measured. The activated nature of the dye diffusion in polymer films is shown. The lessening of the dye diffusion coefficients with the decrease of the films thickness was observed. This experimental fact is qualitatively explained by the influence of the substrates upon the morphology of the polymer, which is produced by the method of a radical photopolymerization. The essential distinctions in the values of the diffusion coefficients for ionic dyes and charge-neutral ones are observed.