

# diploma thesis abstract of Zjabko I.A.

## **Anisotropy of a parameter of absorption in thin films of polymer polyparaphenylene and donor-acceptor compositions on its basis**

In the present work are investigated thin a film of the connected polymer of a soluble derivative polyparaphenylene (PPV). Features of structure of the connected polymer allow most poorly connected pi-electrons delocalise on a chain that results in high anisotropy of properties of a polymeric circuit. Therefore spatial distribution of polymeric chains can render essential influence on anisotropy of macroscopical properties films. Research of this distribution is of interest.

In the present work donor-acceptor composition of PPV with trinitrofluorenon (TNF) which forms a complex with carry of charge (CCT) also is investigated. The hypothesis that dipole the moments of transition of molecules the compositions corresponding to a strip of absorption of a complex, will is put forward are focused mainly perpendicularly surfaces of a film.

In work the following method of definition of optical constants and parameter of anisotropy of a film is used: angular dependences of intensity of the bunch reflected from a surface of a film, for two polarisations - s and p are removed. The received experimental curves are approximated by theoretical dependence and thus required values of optical constants are determined. The parameter directly connected to distribution of circuits in a film - a parameter of anisotropy of absorption is entered.

In a settlement part of work all necessary formulas for calculation of angular dependence are deduced. The program for definition of optical constants on experimental curve angular dependence is written, organized and checked up on test samples.

In an experimental part of work experimental curves of angular dependences of factors of reflection for chosen films are received.

The received experimental data are processed with the help of the program. Values of optical constants and parameters of anisotropy investigated films are determined. For the investigated samples it was possible to determine optical constants with a margin error less than 5%. The received values are in good conformity with the literary data. On the basis of the received values the conclusion that dipole the moments of transition of the connected chains in films are focused mainly in parallel a plane of a surface is made.

The schedule of dependence of values of optical constants of films from concentration TNF is constructed. The put forward hypothesis about properties donor-acceptor compositions MEG-PPV with TNF is indirectly confirmed.