

ISSN 1822–7759

*Book of Abstracts
of the 15-th International Conference-School*

ADVANCED MATERIALS AND TECHNOLOGIES

27–31 August 2013, Palanga, Lithuania



P57. Determination of Charge Carrier Mobility in Thin Films of Indandione Group Containing Azobenzene Compounds

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Thin film deposition by solution casting method is one of low cost processing methods. Therefore, low molecular weight compounds that form amorphous structure from solution are perspective in organic electronics. Electrical properties of these compounds are important in such devices. One of the key parameter of electrical properties is charge carrier mobility.

In this work charge carrier mobility in thin films of indandione fragment containing azobenzene compounds (see Fig.1) was studied. "Sandwich" type samples consisting of the organic compounds as an active layer between ITO as bottom and semi-transparent Al as top electrode were prepared. The organic thin films were made by spin-coating method. The organic film thickness was of the order of 1 μm , which is necessary for Time of Flight and Temperature Modulated Space Charge Limited Current methods (TM-SCLC). TM-SCLC method was used to measure energy distribution of local trapping states in the thin films. It is shown that charge carrier mobility depends on charge carrier traps in the film and bulky groups which are attached to molecule and assist formation of amorphous thin film from solution. Electron and hole mobility of studied materials is from 10^{-5} to 10^{-6} $\text{cm}^2/\text{V}\cdot\text{s}$ and from 10^{-6} to 10^{-7} $\text{cm}^2/\text{V}\cdot\text{s}$, respectively.

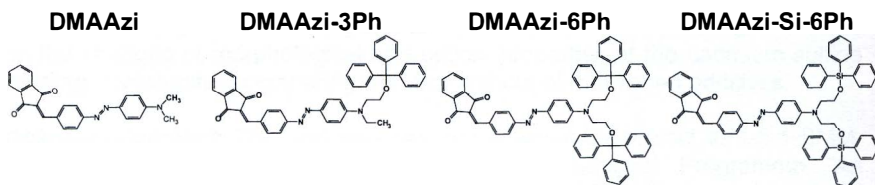


Fig.1. Molecular structure of studied compounds

Keywords: *time of flight method, SCLC, TM-SCLC, glass forming low molecular weight compounds.*