

## **Abstract**

The aim of this work is to measure the diffusion length and mobility of charge carriers in MEH-PPV polymer layers as a function of SiO<sub>2</sub> nanoparticle concentration. MEH-PPV samples contained particles with volume concentrations: 0.0%; 3.5%; 6.0%; 18.5%; 25.0%. The diffusion length was measured by the surface photovoltage (SPV) method. The diffusion length for the samples with lower concentrations: 0.0%; 3.5%; 6.0% was approximately constant at about 12 nm. For samples with concentrations of 18.5%; 25.0%, the diffusion length could not be determined due to the effect of additional traps introduced by the nanoparticles. The mobility was measured by charge extraction by applying a linearly increasing photovoltage method CELIV. The mobility came out to be in the order of 1E-06 for the samples 0.0%; 3.5%; 6.0%; 18.5%; with lower nanoparticle concentration, but the mobility increased by an order of magnitude for the sample with nanoparticle concentration of 25%. This is explained by the fact that the SiO<sub>2</sub> particles improved the material properties.