Diploma thesis abstract

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Photooxidative degradation of donor-acceptor blends of conjugated polymer PPV

In this work there was investigated the dependence of photodegradation rate in MEH-PPV and acceptors (TNF, DNAQ) blends from acceptor concentration with laser photobleaching method. To calculate the photodegradation rate there was developed photobleaching kinetic model of conjugated polymer under the influence of different pump and probe wavelength. The thin films photobleaching was estimated by experimentally obtained kinetic transmission coefficient dependencies under the illumination of continuous laser beam with wavelength of 488 and 514 nm.

It was shown that adding the acceptor leads to 4 order photo-oxidative degradation rate decreasing in comparison with pristine MEH-PPV. Also it was obtained that photo-oxidative degradation rate do not depend on pump irradiation wavelength in chosen range.

The photobleaching rate was compared with photoluminescence quenching data in the same samples. It was shown that photobleaching rate and photoluminescence quenching are correlated.

In this work the potential photooxidation mechanisms in conjugated polymer chains were discussed.

Scientific adviser:

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