



Graduate Physics Seminar
Monday, 21 May 2012 from 4 PM
University of Nova Gorica
Vipavska 13, Rozna dolina, Nova Gorica
SP-1 Lecture room

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Characterization of electric charge carrier transport in organic semiconductors by time-of-flight technique

Abstract

Understanding of the fundamentals of charge carrier injection and transport in organic semiconductors still represents a considerable challenge in realization of advanced organic optoelectronic devices. Charge carrier transport strongly depends on the electronic, chemical and structural properties of a given material. One of the most advanced methods to characterize charge carrier transport in organic semiconductors is based on the measurements of charge carrier transit time in thin layers of organic semiconductors immersed in electric field. Measurements based on a time-of-flight (TOF) technique are performed on sandwich sample structure and coplanar electrode structure. Sandwich sample structure is used to measure electric charge carrier transport in organic thick films of few tens of μm . In coplanar electrode configuration we can measure the electric charge carrier transport of organic thin films only a few nm thick.

In the seminar I will present a typical TOF experimental setup for both sandwich and coplanar electrode configuration, how it works, requirements, limitations and theoretical models to interpret the experimental data.