



Sonderforschungsbereich 595

Elektrische Ermüdung in Funktionswerkstoffen



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Charge transport and transient electroluminescence in organic films

Theoretical analysis of transient electroluminescence (TrEL) in thin organic films controlled by non-equilibrium charge transport is carried out. Results are compared with experimental data for a 100 nm thick film of a phenylenevinylene co-polymer. Normalized transients are highly dispersive and universal at the initial time range which is considered as a manifestation of non-equilibrium field-assisted dispersion of holes. Transit time is the half-rise time rather than the delay time. The method for determination of mobility from TrEL data is revised.

The hopping mobility of charge carriers (both at the surface and in the bulk) is analyzed theoretically in the presence of electron-hole pairs. A physical model is suggested for the metal-type conductivity along the interface between organic materials, each being an insulator by itself. The conductivity is due to the rather high surface density of electron-hole pairs (charge transfer complexes) formed at the interface. The surface conductivity and mobility of charge carriers are estimated by numerical simulation.

Die Vortrag findet um **16:15** im Gebäude der Materialwissenschaften,
Lichtwiese, Petersenstr. 23, **Raum 77** statt