

Charge transport in bilayers of porous TiO₂ and conjugated polymers

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Charge carrier transport in bilayers of porous TiO₂ and regioregular poly(3-hexylthiophene) has been studied using equilibrium and photo-generated charge carrier extraction by linearly increasing voltage (CELIV) technique. The equilibrium or photo-generated charge carriers can hide the bulk limited resistivity of the sample. There we show by using two consequent linearly increasing voltage pulses we can estimate true transport parameters such as charge carrier concentration, mobility and conductivity and their relaxation on long time scales.

We have measured the time dependences of equilibrium and photo-generated charge carrier concentration and conductivity limited by bulk resistivity.

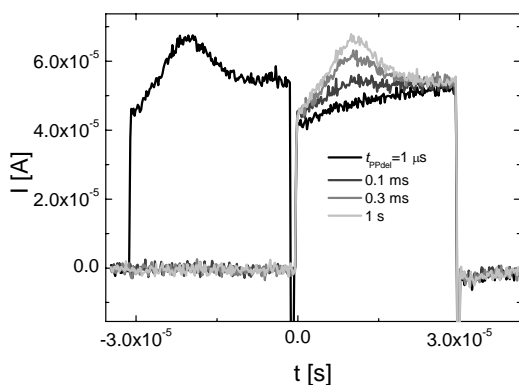


Fig. 1 The relaxation of the dark equilibrium charge carriers.

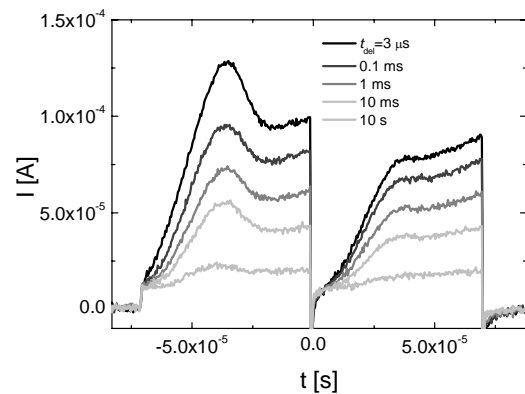


Fig. 2 The relaxation of photo-generated charge carriers.