



Oili Pekkola
Time of flight

Time of flight (also known as transient photoconductivity) is often a method of choice for the determination of charge carrier mobilities in highly insulating materials that have low charge carrier densities and mobilities. In this method, a typically few μm thick film of the investigated material is sandwiched between two electrodes, one of which is semitransparent. Charge carriers are created optically by illuminating the sample through the semitransparent electrode and one charge carrier species is driven through the film due to an applied electric field. The transit time of the charge carrier package is probed and is used for mobility determination. The technique allows separate determination of the transit times of both charge carrier species, which is done by changing the bias of the applied voltage. In time of flight measurements, the charge transport is measured as a volume property, and the influence of charge injection can thus be ruled out.