

Impedance spectroscopy study of metal–organic–metal structures

Abd-El-Hakim Bekkali  , Ilja Thurzo, Thorsten U. Kampen and Dietrich R. T. Zahn

Institut für Physik, Technische Universität Chemnitz, 09107, Chemnitz, Germany

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Abstract

In this work we have investigated the dielectric properties of Ag/PTCDA/Ag structures using impedance spectroscopy (IS). An equivalent circuit is developed for the *ac* small-signal excitation with frequencies between 100 Hz–5 MHz. It is possible to fit the data at different *dc* biases without introducing any frequency-dependent element to the equivalent circuit. The space charge region at the bottom Ag contact strongly resembles Schottky-barrier behavior, while disorder induced interface dipoles seem to occur at the top Ag/PTCDA interface. For the latter one, the related energy distribution of density of states as deduced from the excess capacitance of this zone fairly matches a Gaussian profile.

Author Keywords: Organic semiconductors; Schottky barrier; Interface states
