O 51 Hauptvortrag Kampen

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Hauptvortrag

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Electronic structure of organic interfaces — •Thorsten Ulrich Kampen — Fritz-Haber-Institut der Max-Planck-Gesellschaft, Faradayweg 4-6, D-14195 Berlin, Germany

The energy level alignment at organic interfaces determines the efficiency of charge injection into organic films. Quite often the vacuum level alignment rule has been used to determine the energy level alignment at organic interfaces. Here, barrier heights can simply be calculated using the ionisation potentials or electron affinities of semiconductors materials and work functions of metals. For organic interfaces a conclusion has been reached that in general the vacuum levels do not align. This difference in vacuum levels is attributed to interface dipoles. Another important issue is the occurrence of a band-bending like electrostatic energy shift in organic layers, which has been observed in many metal/organic systems. In most cases this shift is confined to a regime of only a few nanometers, which cannot be accounted for using the conventional band bending theory of inorganic semiconductors. Shifts occurring in such small thickness ranges can be due to a change in the intermolecular interaction, namely, due to a change in the molecular orientation as a function of the film thickness. At intimate, abrupt, and defect free interfaces of organic semiconductors which show a band like dispersion in the highest occupied energy levels interface induced gap states govern the energy level alignment.