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Symposium EM01—Organic Semiconductors—Surface, Interface, Bulk Doping and Charge Transport

Doping inorganic semiconductors allows tuning their electrical properties to application-specific demands, therewith forming the basis for the intriguing multitude of microelectronic devices in today's information society. Particularly for opto-electronic applications, organic semiconductors (OSCs), that is, conjugated organic molecules and conjugated polymers, have emerged as valuable alternative for low-cost, large-area processing on flexible substrates owing to the ease of band gap engineering through their intrinsic chemical variability. For organic electronics, however, the high potential of electrical doping for improving device performance and enabling novel functionality has only recently been established, with the majority of present applications being still based on intrinsic OSCs. This is mainly due to the fact that, in contrast to inorganic semiconductor doping, the doping efficiency of OSCs remains conspicuously low, which highlights that the underlying fundamental mechanisms still are not well understood compared to their inorganic counterparts. Moreover, limited processability and control over the microstructure of doped films, as well as the intrinsic chemical instability of molecular (n-)dopants represent practical hurdles that still preclude resounding success in applications.

The present symposium aims at stimulating an interdisciplinary discourse on the molecular electrical doping of OSCs by bringing together current theoretical and experimental viewpoints from physics, chemistry, and materials science on both doping fundamentals and its practical realization in organic electronics.

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FALL MEETING

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