

Invitation to guest lecture

Organic Solar Cells fabricated from Eco-friendly Nanoparticle Dispersions

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Solution processing from nanoparticle dispersions allows the use of eco-friendly processing agents for the deposition of organic semiconductor thin-films for photovoltaic and other optoelectronic applications. Omitting surfactants to stabilize the dispersions is essential to not jeopardize the solar cell performance. So far, solar cells could only be fabricated from surfactant-free P3HT dispersions which show some intrinsic self-stabilization. In this work, the self-stabilization of P3HT nanoparticle dispersions is demystified, and electrostatic effects are identified as the origin of self-stabilization. By application of this gained knowledge, novel surfactant-free nanoparticle dispersions from other, high-performance organic semiconductors are synthesized by nanoprecipitation. Electrical doping warrants the electrostatic stabilization of the dispersions. For the first time, the corresponding solar cells achieved power conversion efficiencies of up to 10.6%, demonstrating the general feasibility of this alternate, all-eco-friendly processing route.

Time: 17 March 2023, 13 - 13:45

Place: Auditorium A (5.018), Skjernvej

Organizer: Department of Materials and Production