

# Manipulating the morphology in printed organic solar cells

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The nanomorphology can strongly influence the physical properties of organic thin films. For example, polymer:fullerene blends used in organic photovoltaics vary significantly in performance depending on the inner film morphology. To allow large-scale production of these devices, control of the nanostructure during the processing of the active layer is important. This needs an understanding of the processes involved during the drying of the film. Using an industrial slot-die coater implemented into a synchrotron beamline we have successfully characterized the solidification process of an active layer using grazing incidence small and wide angle X-ray scattering (GISAXS/GIWAXS). We use the gained knowledge to further manipulate the structure of printed organic thin films by external intervention while printing. With this manipulation, we are able to positively influence the morphology and thus the performance of the produced devices.

**Primary author:** Mr PROELLER, Stephan (MSE - Herzig Group)

**Co-authors:** Dr HEXEMER, Alexander (Lawrence Berkeley National Laboratory); Dr ZHU, Chenhui (Lawrence Berkeley National Laboratory); Mr MOSEGUÍ GONZÁLEZ, Daniel (TU München); Dr HERZIG, Eva M. (Munich School of Engineering); Prof. MÜLLER-BUSCHBAUM, Peter (TU München, Physik-Department, LS Funktionelle Materialien)

**Presenter:** Mr PROELLER, Stephan (MSE - Herzig Group)

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