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## Green Solvents in Organic Solar Cells and their Influence on Performance and Stability

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Lately, organic solar cells (OSCs) have gained increasing attention due to their rapidly increasing efficiencies as well as the relatively easy scalability in their manufacture. To make the manufacturing process of the bulk-heterojunction (BHJ) more environmentally friendly, increased efforts have recently been made to use halogen-free solvents, which, however, can lead to reduced efficiencies.

We investigate the changes in morphology and performance stability of PTQ-2F:BTP-4F OSCs processed from various solvents, utilising operando grazing-incidence small and wide angle X-ray scattering during illumination and solar cell operation. We further show the impact of solvents on the charge carrier generation in the respective BHJs using time-resolved transient absorption spectroscopy, analysing the connection between thin-film morphology and device performance. Also we analyze the impact of solvents on the mesoscopic distribution of small molecules within the bulk heterojunction through scattering-type scanning near-field optical microscopy.

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