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Ultrafast multidimensional spectroscopy of P3HT thin films
CONG MAI, NC State University, SINAN CAN, NC State University and Bogazici University, ANNE WATSON, HARALD ADE, KENAN GUNDOGDU[1], NC State University — We report on measurements of morphology dependence of exciton/polaron dynamics in P3HT thin films. Intrachain and interchain electronic coupling has a significant impact on optical and electronic properties of polymers. Due to flexibility of polymers, slight differences in processing results in a variation of morphologies and electronic coupling between the chains. We employ ultrafast multidimensional spectroscopy techniques to resolve the resulting polaron formation dynamics in different polymer thinfilms spin casted from different solvents. Our results suggest, depending on the average conjugation length and crystallinity of the thin film, polaron formation dynamics exhibit spectrally homogeneous or inhomogeneous behavior.

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