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Device simulation of morphologies that are consistent with small angle scattering and reflectometry DANIEL OLDS, PHILLIP DUXBURY, Michigan State University — Through the use of a dynamic Monte Carlo simulation, we are able to evaluate the efficiency of bulk heterojunction morphologies of P3HT/PCBM based photovoltaic devices that are consistent with neutron reflectometry and SANS data. We have developed a method to efficiently generate simulated small angle scattering data from hypothetical nanoscale systems such as polymer-fullerene bulk heterojunctions found in organic photovoltaic devices. We will show how this method can be used to accurately calculate the scattering information of well known systems such as a polydisperse collection of hard and soft spheres. We will then demonstrate this method on the calculated device morphologies, and show how the simulated scattering can grant insight into the validity of assumptions based on traditional fitting methods.

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