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Monte Carlo simulations of charge transport in heterogeneous organic semiconductors PYIE PHYO AUNG, KIRAN KHANAL, JUTTA LUETTMER-STRATHMANN, Departments of Physics and Chemistry, The University of Akron, Akron, OH 44325-4001 — The efficiency of organic solar cells depends on the morphology and electronic properties of the active layer. Research teams have been experimenting with different conducting materials to achieve more efficient solar panels. In this work, we perform Monte Carlo simulations to study charge transport in heterogeneous materials. We have developed a coarse-grained lattice model of polymeric photovoltaics and use it to generate active layers with ordered and disordered regions. We determine carrier mobilities for a range of conditions to investigate the effect of the morphology on charge transport.

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