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**The Effect of Correlated Energetic Disorder on Charge Transport in Organic Semiconductors** JONATHAN ALLEN, University of New Mexico, SEBASTIAN RÖDING, University of Wurtzberg, CHARLES CHERQUI, DAVID DUNLAP, University of New Mexico — In their 1995 paper describing a Monte Carlo simulation for dissociation of an electron-hole pair in the presence of Gaussian energetic disorder, Albrect and Bässler reported a surprising result. They found that increasing the width $\sigma$ of the energetic disorder increases the quantum yield $\Phi$. They attributed this behavior to the tendency for energy fluctuations to compete against the Coulombic pair attraction, driving the electron-hole pair apart at short distances where, without disorder, recombination would be almost certain. We have expanded upon this notion, and introduced spatial correlation into the energetic disorder. By correlating the energetic disorder, we have demonstrated even larger quantum yields in simulation, attributable to the tendency of correlation to drive the charges further apart spatially than merely random disorder. Our results generally support the findings of Greenham et al. in that a larger correlation radius gives a larger quantum yield. In addition to larger quantum yield, we believe that correlated disorder could be used to create pathways for charge transport within a material, allowing the charge carrier behavior to be tuned.

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