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**Can singlet fission enhance the performance of organic solar cells?**[1] JORGE MUNOZ, KARAN ARYANPOUR, SUMIT MAZUMDAR, University of Arizona — At the heart of organic photovoltaics lies photoinduced charge-transfer (PICT), whereby a photoexcited donor molecule transfers an excited electron to an acceptor molecule, creating a positive charge (hole) on the donor and a negative charge (electron) on the acceptor. The excited electron and hole form a bound intermolecular *spin-singlet* exciton, and charge separation can occur if the binding energy of this exciton is not too high. A photophysical process that sometimes competes with the singlet channel is the fission of the lowest *intramolecular* spin singlet into *two* spin-triplet excitations. The energy requirement for such a process is $E(S) \geq 2E(T)$, where $E(S)(E(T))$ is the energy of the lowest singlet (triplet) exciton. In principle, each spin triplet has subsequently the potential to undergo charge-transfer, thereby doubling the efficiency of charge generation. While a large number of groups are therefore engaged in the study of singlet fission, a key question remains whether such low energy triplets at all participate in further charge-transfer, as their binding energies must be large. We will report the results of our investigations of the utilization of low energy triplets in PICT.

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