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Charge transfer excitons in codeposited organic films XIAOSHENG WANG, AJWARD MILHAN, HANS PETER WAGNER, University of Cincinnati — Charge transfer (CT) excitons play an important role in solar cells and organic light emitting devices. Such excitons are usually formed at the hetero-interfaces with an electron and hole residing in different materials. We studied the formation and recombination dynamics of CT excitons in co-deposited Alq3/PTCDA, TPD/Alq3, and TPD/PTCDA thin films that are grown by organic molecular beam deposition with various co-deposition ratios. (Alq3: *Tris(8-hydroxyquinolinato)aluminium*, PTCDA: *perylene-3,4,9,10-tetracarboxylic-3,4,9,10-dianhydride,* TPD: *N,N'-Bis(3-methylphenyl)- N,N'-diphenylbenzidine.*) The formation of CT excitons is associated with a quenching of the photoluminescence (PL) of the individual material. The PL spectrum shows a new emission peak at ∼750 nm for Alq3/PTCDA films and ∼700 nm for TPD/Alq3 which we tentatively attribute to the radiative recombination of CT excitons. The formation and decay time of the CT excitons is studied by time-resolved PL measurements using the technique of time-correlated single photon counting.

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