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(57) Abstract :

The present disclosure relates to photosensitive optoelectronic devices comprising a compound blocking layer located between an acceptor material and a cathode the compound blocking layer comprising: at least one electron conducting material and at least one wide gap electron conducting exciton blocking layer. For example 3 4 9 10 perylenetetracarboxylic bisbenzimidazole (PTCBI) and 1 4 5 8 naphthalene tetracarboxylic dianhydride (NTCDA) function as electron conducting and exciton blocking layers when interposed between the acceptor layer and cathode. Both materials serve as efficient electron conductors leading to a fill factor as high as 0.70. By using an NTCDA/PTCBI compound blocking layer structure increased power conversion efficiency is achieved compared to an analogous device using a conventional blocking layers shown to conduct electrons via damage induced midgap states.

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