

Abstract Submitted
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Harvesting Lost Photons: Minimizing Sub-Bandgap Losses in Organic Photovoltaic Devices by Up-conversion CLARA SANTATO, LORANGER SEBASTIAN, BANVILLE DAVID, Genie Physique/Polytechnique Montreal, ROSEI FEDERICO, EMT-INRS/Varennnes, PEREPICHKA DMIYTRO, McGill/Chemistry — We report on a novel approach to increase the efficiency of organic photovoltaic (OPV) cells in the near-infrared region of the solar spectrum by blending the organic semiconductors with rare-earth doped nanoparticles with up-converting photophysical properties. The approach consists in (i) synthesizing lanthanide-doped nanoparticles capable of efficient energy transfer of up-converted near-infrared (NIR) photon energy to conjugated polymers; (ii) assembling these nanoparticles, in blends with p-type polythiophenes and n-type fullerenes, in solution-processed OPV cells capable to harvest NIR photons.

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