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Ferroelectrically-driven photocurrent in P3HT-based diodes ELENI PAVLOPOULOU, CARINE LACROIX, ANTIGONI PASPALI, GUILLAUME FLEURY, CYRIL BROCHON, ERIC CLOUTET, LCPO, CNRS/University of Bordeaux/Bordeaux INP, Pessac France, FABRICE DOMINGUES DOS SANTOS, Piezotech, France, MARIO MAGLIONE, ICMCB?CNRS, University of Bordeaux, Pessac France, GEORGES HADZIIOANNOU, LCPO, CNRS/University of Bordeaux/Bordeaux INP, Pessac France — Blends of ferroelectric and semiconducting polymers are known to phase separate in thin film configuration, forming semiconducting columnar structures embedded in a ferroelectric matrix. These blends have been used in the past to fabricate non-volatile bistable diodes. In this work we demonstrate that the phase separated network of poly(3-hexylthiophene), P3HT, and poly(vinylidenefluoride-co-trifluoroethylene), P(VDF-co-TrFE), can be also used for the extraction of photocurrent under illumination. Furthermore, we provide experimental proofs on the ferroelectric origin of this photocurrent and we show that its magnitude depends on the polarization characteristics of the pre-polarized P(VDF-co-TrFE) matrix. The devices we propose herein can provide an alternative to the existing organic photovoltaic devices.

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