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Dehydration assisted nanoimprint of PEDOT:PSS nanogratings to improve organic photovoltaics YI YANG, KOYAU LEE, KAMIL MIELCZAREK, WALTER HU, ANVAR ZAKHIDOV, DEPARTMENT OF ELECTRICAL ENGINEERING, THE UNIVERSITY OF TEXAS AT DALLAS TEAM, DEPARTMENT OF PHYSICS,THE UNIVERSITY OF TEXAS AT DALLAS TEAM — We demonstrate the fabrication of oly(3,4-ethylenedioxythiophene) poly(styrenesulfonate) (PEDOT:PSS)nanograting by a dehydration assisted nanoimprint lithographic technique. Dehydration of PEDOT:PSS increases its mechanical strength for high fidelity and fine precision nanoimprinting process, resuling in formation of high quality nanogratings of 60 nmin height, 70 nm in width, and70 nm in spacing. PEDOT:PSS nanograting ar used as hole injection and electron barrier layer in blended poly(3-hexylthiophene-2,5-diyl) (P3HT)[6,6]-penyl-C61-butyric-acid-methyl-ester PCBM) rganic bulk heterojuncton photovoltaic devices (OPV), showing enhancement of photocurrent and increased efficiency in comparison to non-patterned plane PEDOT:PSS film. Improved performance is discussed in terms of increased interface for charge collection and better distribution of internal electric field.

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