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$p-n$ junction diodes fabricated from isolated electrospun fibers of (P(NDI2ODT2)) and an inorganic p-doped semiconductor[1] ALEXANDER ROSADO, NICHOLAS PINTO, University of Puerto Rico - Humacao — A simple method to fabricate, under ambient conditions and within seconds, $p-n$ diodes using an individual electrospun poly{[N , N′-bis(2-octyldodecyl)-naphthalene-1,4,5,8-bis(dicarboximide)-2,6-diyl]-alt-5,5′-(2,2′-bithiophene)}-(P(NDI2ODT2)) fiber and a commercially available p-doped Si/SiO_2 substrate is presented. Band bending at the fiber/Si^+ interface leads to asymmetric I-V characteristic curves resembling that of a diode. The diode turn-on voltage was in the range $\sim$1V and was unaffected via UV light irradiation. The rectification ratio however could be tuned reversibly thereby making this device multifunctional. In addition to being a rectifier, the advantage of our design is the complete exposure of the rectifying junction to the surrounding environment. This has the advantage of making them attractive candidates in the potential fabrication of low power, sensitive and rapid response photo-sensors.

[1]NSF

Nicholas Pinto
University of Puerto Rico - Humacao

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