Anomalous charge transport behavior of fullerene based diodes

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Static and time resolved Voltage-Current (V-I) measurements were performed on a series of sandwich structured diodes based on vapor deposited Fullerene C_{60} and spin-coated (6,6)-phenyl-C_{61}-butyric-acid methylester (PCBM; a soluble C_{60} derivative) as active layer. The temperature dependence of the injection current was measured in range between 15 K and 295 K. Below 120 K, the PCBM diodes show bistable V-I characteristics. In the bistable region, pulsed current measurements were performed in order to determine the timescale on that the switching between the high and the low voltage state occurs. In contrast diodes containing evaporated C_{60}, V-I curves with ultra-low differential resistance are observed.

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