Photon assisted-inversion of majority charge carriers in molecular semiconductors-based organic heterojunctions

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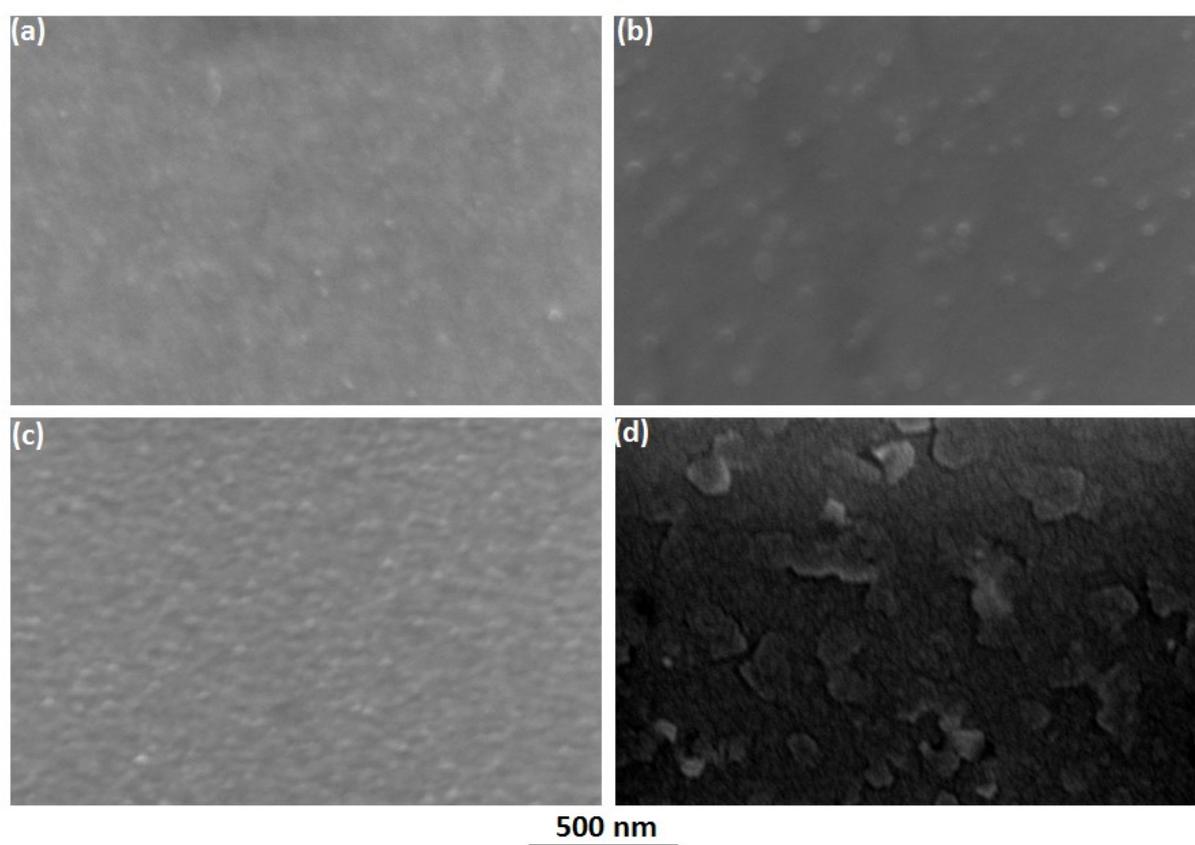

Fig. S1 SEM images of 50 nm thin films of $Cu(F_8Pc)$ (a), $Cu(F_{16}Pc)$ (b), CuPc (c), and $Cu(Cl_8Pc)$ (d) coated on glass substrate.
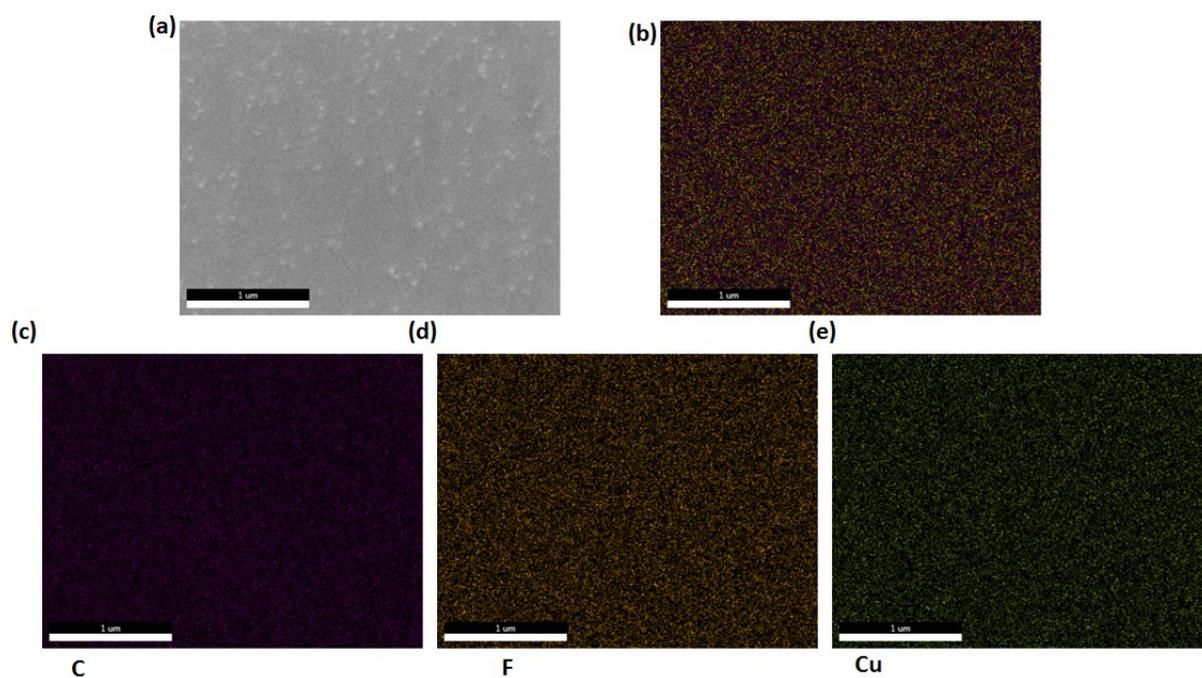
Fig. S2 EDX mapping of 50 nm Cu(F$_{16}$Pc) thin film coated on glass substrate.

Table S1 Reliability factors of XRD data refinement.

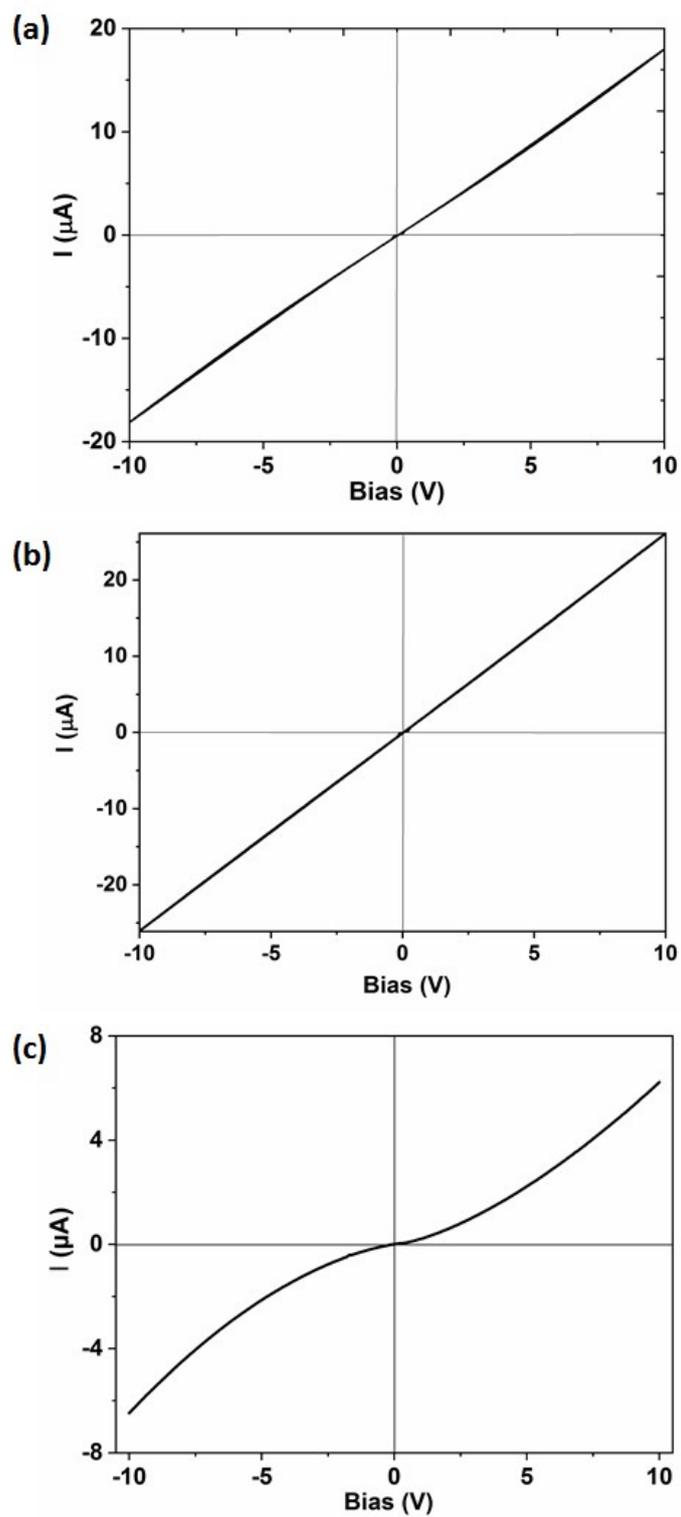| Sample	Reliability factor (chi²)
CuPc	1.38
Cu(F$_8$Pc)	1.16
Cu(F$_{16}$Pc)	2.14
Cu(Cl$_8$Pc)	1.14
LuPc$_2$	1.14

Fig. S3 I-V curves of CuPc/LuPc$_2$, (a) LuPc$_2$ resistor (b) and Cu(Cl$_8$Pc)/LuPc$_2$ (c) in a bias range of -10 V to 10 V.
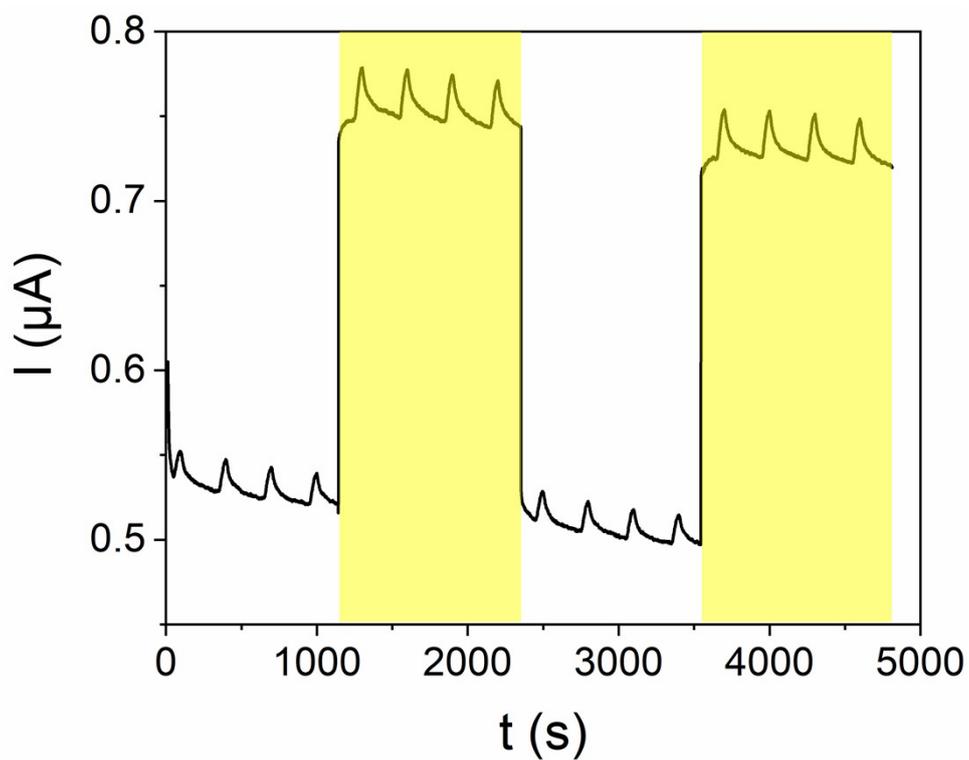
Fig. S4 Response of a permanently n-type LuPc$_2$/Cu(F$_8$Pc) heterojunction towards NH$_3$ (20 ppm), during 1 min / 4 min exposure / recovery cycles, at 40% rh, under a bias of 4 V, in the alternate cycles of dark and under visible light.
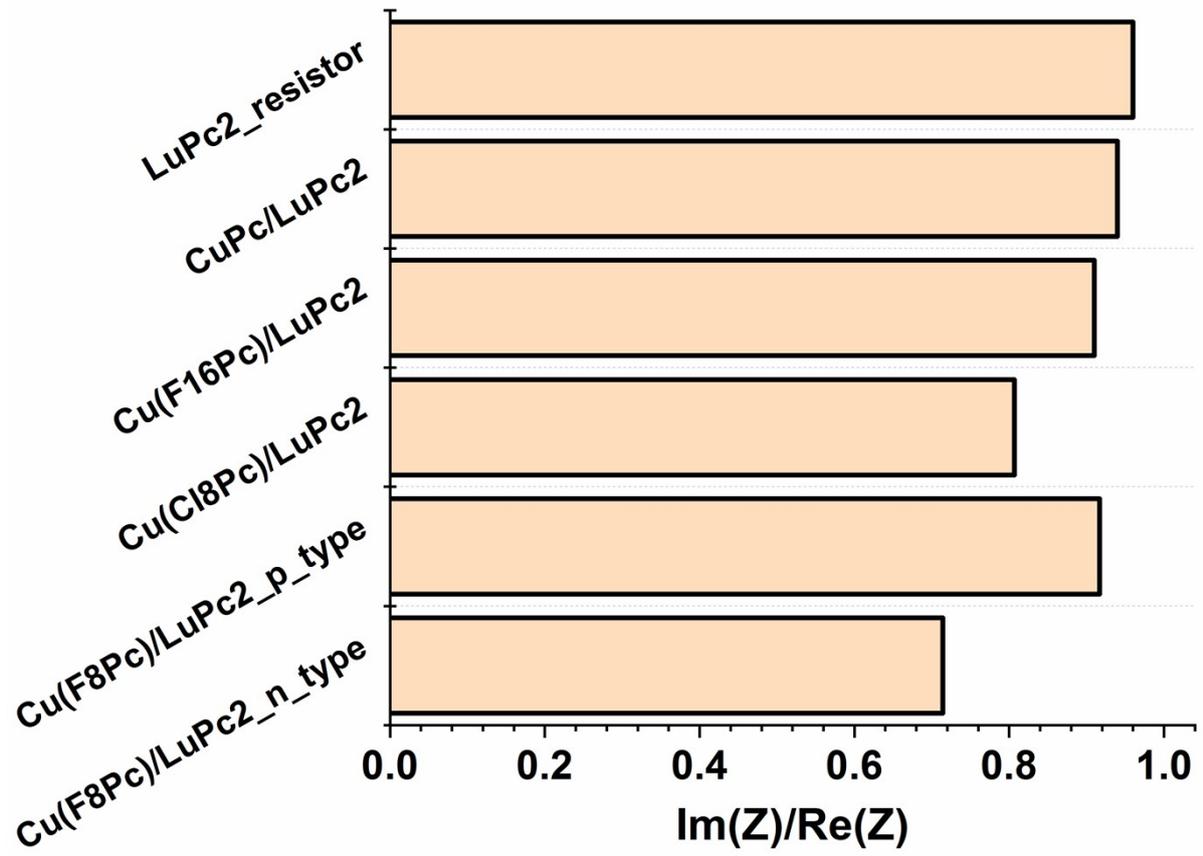
Fig. S5 The depression of the semicircles at HF in the Nyquist plots defined by ratio of imaginary impedance to real impedance at the maximum of imaginary impedance for different devices.
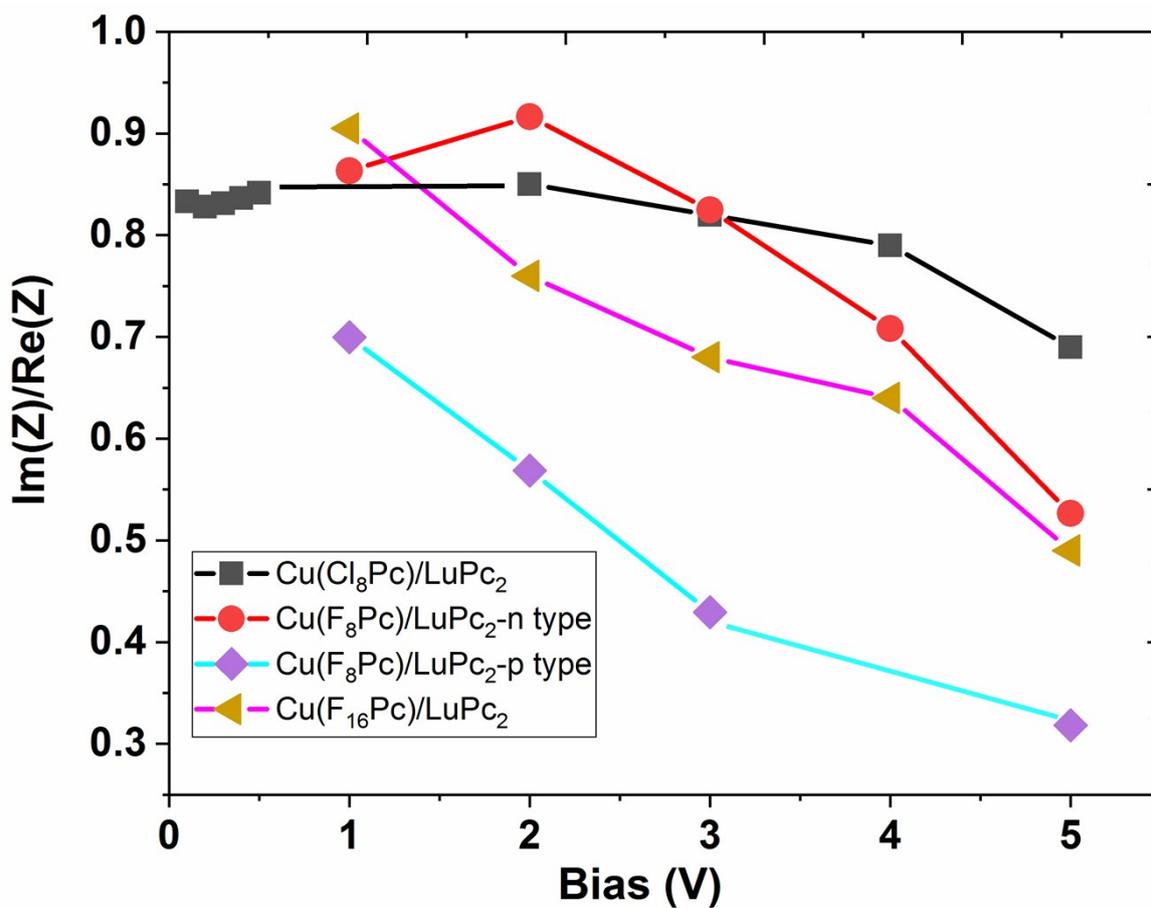
Fig. S6 The variation of depression in the semicircles at LF in the Nyquist plots defined by ratio of imaginary impedance to real impedance at the maximum of imaginary impedance with applied bias for different devices.