

Solution processed Graphene electrodes for efficient organic photodetectors

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The outstanding optical and electronic characteristics of graphene have raised great interest in making flexible optoelectronic devices[1]. Photodetectors are devices that use p-n junctions and the photoelectric effect to convert electromagnetic signals into electrical ones[2]. In this work, Graphene was produced by electrochemical exfoliation to obtain highly concentrated Graphene inks (0,8 mg/ml). Transparent photodetectors based on graphene and PEDOT: PSS (Poly (3,4- ethylenedioxythiophene) -poly (styrene sulfonate)) as the n-doped layer and P3HT (poly (3 hexylthiophene-2, 5-diyl)) as the p-doped one were prepared. The photo-response was measured in the ms range using a photoconductivity set up. This type of response could be promising for fast, economical and flexible electronics.

References

- [1] A. Kumar , C. Zhou , *ACS Nano* **2010** , 4 , 11.
- [2] H. A. Becerril , J. Mao , Z. Liu , R. M. Stoltenberg , Z. Bao , Y. Chen , *ACS Nano* **2008** , 2 , 463

Figures

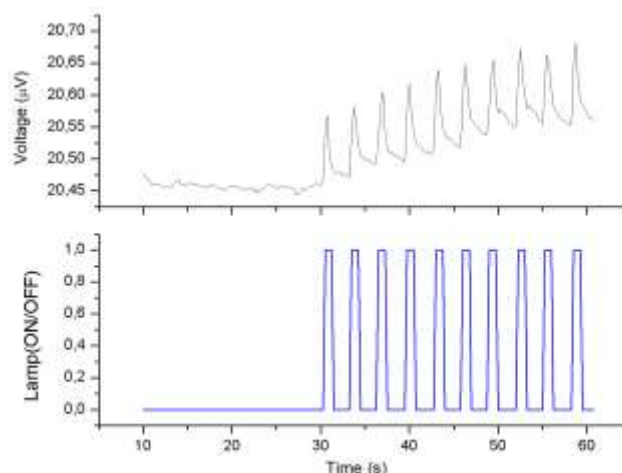


Figure 1: The on/off characteristics of the photodetector at 5V bias on a glass substrate.

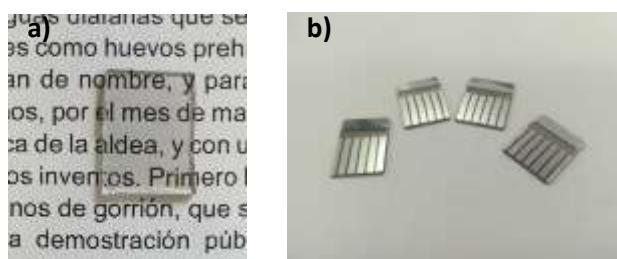


Figure 2: a) Graphene deposited ink upon glass substrate. b) Photodetector device fabricated with graphene, PEDOT:PSS and P3HT sandwich structure.