Supporting Information

Copper (II) phthalocyanine supported on three-dimensional nitrogen-doped graphene/PEDOT-PSS nanocomposite as highly selective and sensitive sensor for ammonia detection at room temperature

Hamed Sharifi Dehsari[†a], Jaber Nasrollah Gavgani[†a], Amirhossein Hasani[c], Mojtaba Mahyari[*b], Elham Khodabakhshi Shalamzari[a], Alireza Salehi[c], Farmarz Afshar Taromi[1a]

a) Department of Polymer Engineering and Color Technology, Amirkabir University of Technology, P.O.Box 15875-4413, Tehran, Iran
b) Department of Chemistry, Shahid Beheshti University, G. C., P.O.Box 19396-4716, Tehran, Iran
c) Department of Electrical Engineering, K.N. Toosi University of Technology, P.O.Box 16315- 1355, Tehran, Iran

[1]Email address: afshar@aut.ac.ir; m_mahyari@sbu.ac.ir
Tel: +982164542401
[†]First two authors contributed equally to this work.

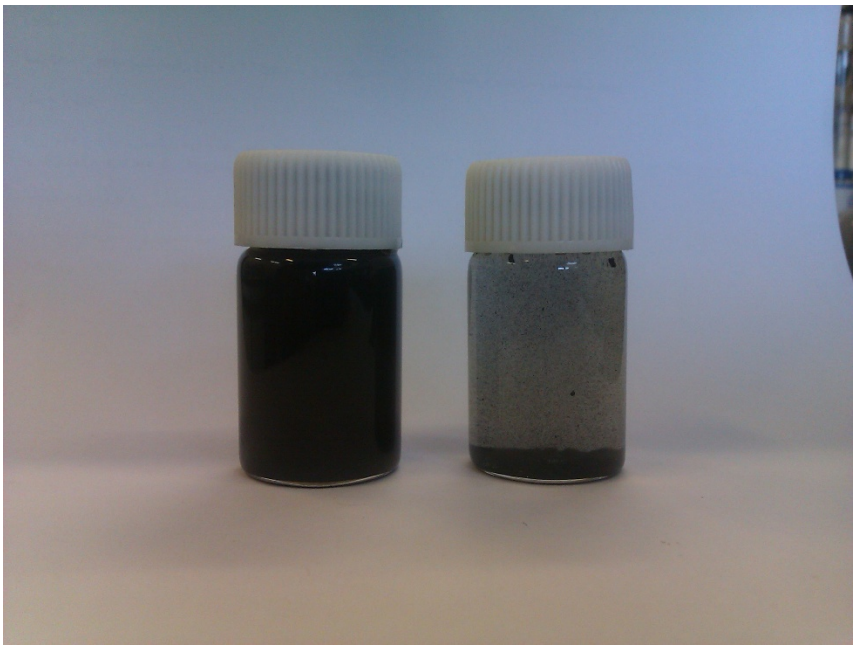

Fig. S1 Dispersity of 3D-(N)GFs and CuTSPc@3D-(N)GFs

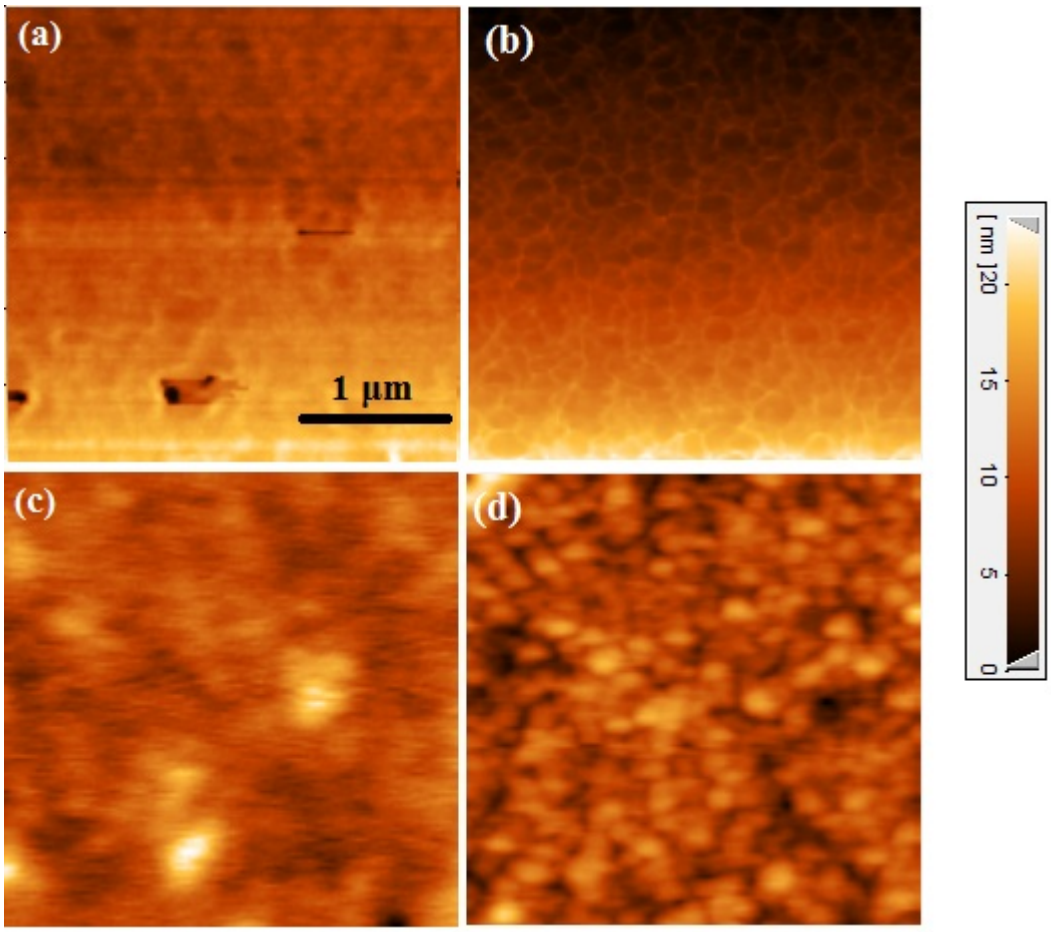

Fig. S2 AFM topographical images of (a) pure PEDOT-PSS, (b) CuTSPc@3D-(N)GFs/PEDOT-PSS and phase images of (c) pure PEDOT-PSS and (d) CuTSPc@3D-(N)GFs/PEDOT-PSS nanocomposite sensing films.

Surface morphologies and phase images of pure PEDOT-PSS and CuTSPc@3D-(N)GFs/PEDOT-PSS nanocomposite sensing films were are shown in Fig. S2. From AFM images, it can be seen that pristine PEDOT-PSS film surface is very smooth corresponding to its SEM image (see Fig. S2a). With CuTSPc@3D-(N)GFs incorporation, the film surface becomes relatively rough covering with a number of nanoprotrusions (see Fig. S2b). From the AFM phase image (see Fig. S2c), the PEDOT-PSS sensing film shows relatively low contrast in the phase. The bright and dark areas in the phase image are expected to correspond to PEDOT-rich grains and PSS-rich matrix, respectively. It is seen that the grain and matrix mixture is homogeneous indicating that PEDOT-rich grains exhibit very good connection with PSS-rich matrix via DMSO binders resulting in the enhancement of carriers conducting pathways [1, 2]. In case of CuTSPc@3D-(N)GFs/PEDOT-PSS (see Fig. S2d), the strong contrast in the phase can distinguish the relatively hard structures (CuTSPc@3D-(N)GFs) from the softer component (PEDOT-PSS). However, the CuTSPc@3D-(N)GF structures in and on PEDOT-PSS network cannot be very clearly distinguished due to overcoating of PEDOT-PSS on CuTSPc@3D-(N)GFs surfaces and limited resolution in AFM.

References

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2. Dehsari, H.S., et al., *Efficient preparation of ultralarge graphene oxide using a PEDOT: PSS/GO composite layer as hole transport layer in polymer-based optoelectronic devices.* RSC Advances, 2014. **4**(98): p. 55067-55076.