Supporting Information for

Hydrothermally functionalized biocompatible nitrogen doped graphene nanosheets based biomimetic platforms for nitric oxide detection

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Experimental:

All the solvents and reagents were obtained from commercial sources and were used without further purification.

SI 1

Synthesis of NGS:

CNS was synthesized by improved literature procedure. Melamine was purified prior to use for the synthesis of CNS. In this method, melamine was dissolved in water containing caustic soda at an elevated temperature of about 130 °C. The resultant hot caustic liquor was then clarified by decantation or filtration. The solution was further cooled to room temperature, giving rise to crystallized, substantially pure melamine product. This purified melamine was employed for CNS synthesis. It was revealed by Field Emission Scanning Electron Microscopy (FESEM) images that the product was devoid of any carbon spheres and comprised of only thin sheets, unlike the product obtained from previously reported procedure.[SIa]

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Undoped CCM was also synthesized using only glycerol and sulphuric acid. In a typical procedure, 10 ml of 98% sulphuric acid was added to 10 ml of glycerol and stirred vigorously. The mixture was transferred to a 40

ml PTFE lined stainless steel autoclave and heated at 180 °C for 4 h under autogenous pressure. The resulting black colored powder (undoped CCM) was then washed with acetone followed by deionized (DI) water. The synthesized CCM was dried over night at 50 °C in hot air oven.[SIc]

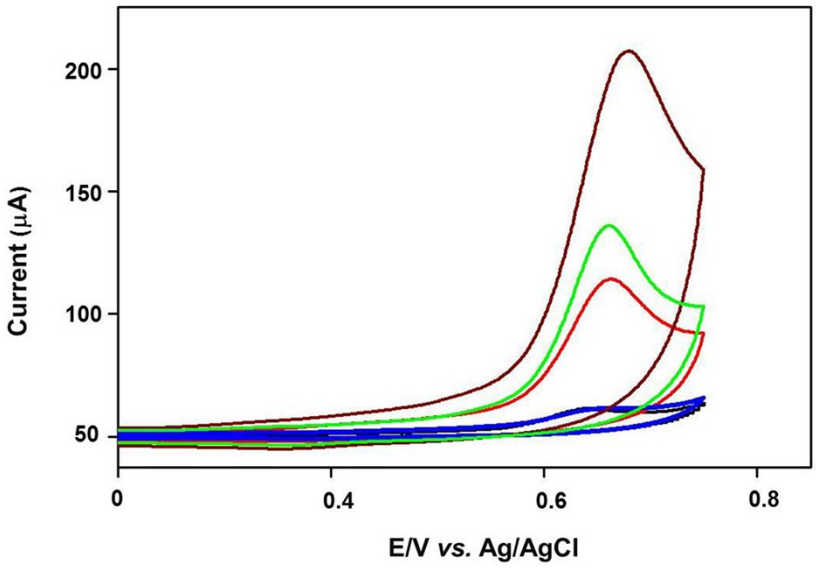
Nitrogen was incorporated in CNS using melamine as source. The as-synthesized CNS was further reduced to form NGS *via* hydrothermal technique. The CNS material (0.25 g) was taken in a PTFE lined stainless steel autoclave containing deionized (DI) water and heated at 140 °C for 10 h under autogenous pressure. The mixture (NGS) was then washed with acetone and large amount of DI water followed by drying under ambient conditions.[SIb]

Synthesis of CNS:

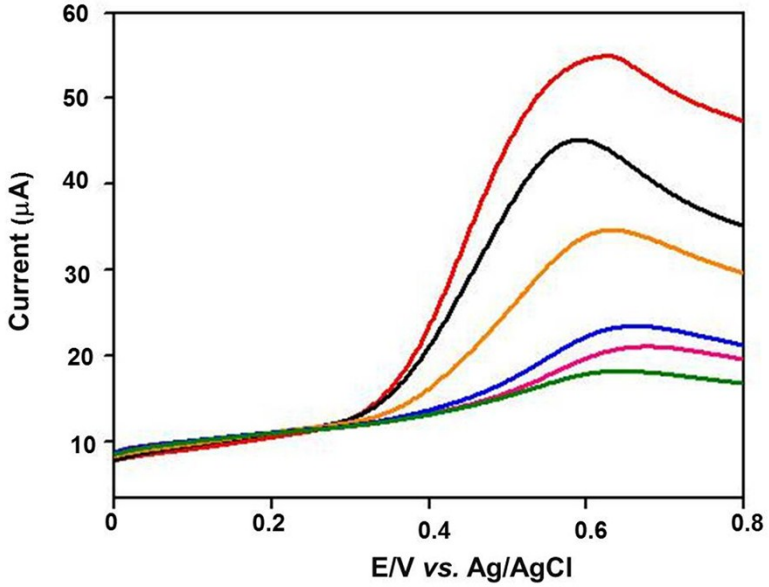
In a typical synthesis,[S1d] 0.5 g of purified melamine was added to 10 ml of glycerol and stirred until melamine was dissolved in glycerol followed by the addition of 10 ml of 98% sulphuric acid under vigorous stirring. The mixture was transferred to a 40 ml PTFE lined stainless steel autoclave and heated at 180 °C for 4 h under autogenous pressure. The resulting product (CNS) turned into black colored powder which was washed with ethanol followed by deionized (DI) water. The synthesized CNS was dried at 50 °C in hot air oven and was further treated hydrothermally.

SI 2

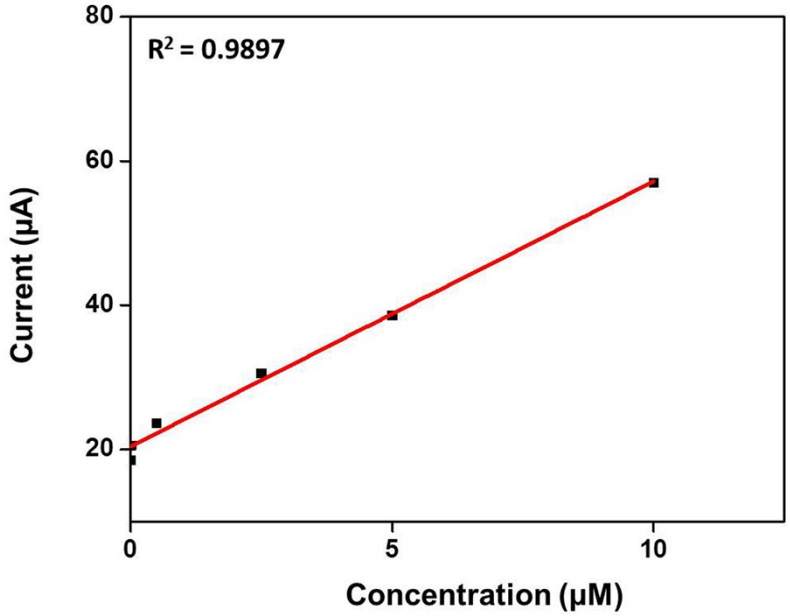
Different scan rates (20, 50, 70, 100 and 120 mV/sec) for 10 μM NO using PFNGS in 0.1 M PBS.



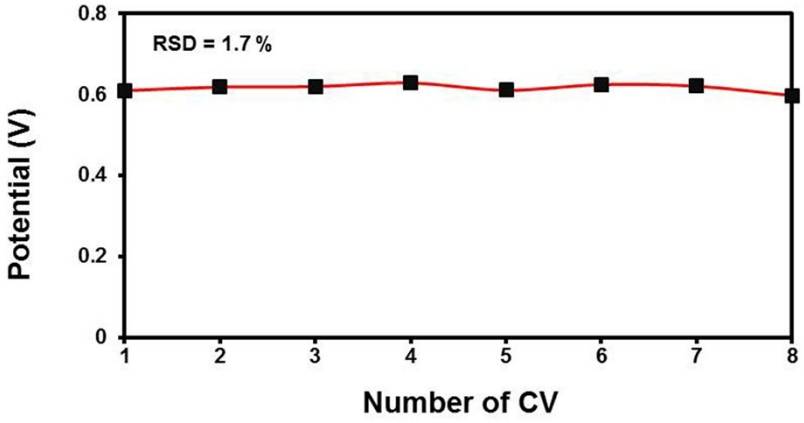
SI 3
LSV of PFNGS in different concentrations of NO (10, 5, 2.5, 0.5, 0.01 and 0.001 µM) in 0.1 M PBS.



SI 4
PFNGS modified electrode linear regression graph for NO detection (concentration range: 10 nM – 10µM; LOD = 1 nM)



SI 5
PFNGS modified electrode reproducibility graph for NO detection for 8 LSV cycles (Potential *vs.* LSV)



References for Supporting Information

[SIa.] M. A. Vadivel, T. Muraliganth and A. Manthiram, *Chem. Of Mater.,* 2009, **21**, 5004-5006.

[SIb] D. Suhag, A. Singh, S. Chattopadhyay, S. Chakrabarti and M. Mukherjee, *RSC Adv*., 2015, **5**, 39705–39713.

[S1c] D. Suhag, A. Chakraborty, P. Patni, G. Saini, A. Singh, S. Chakrabarti and M. Mukherjee, *RSC Adv.,* 2015, **5**, 23591-23598.

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