Supporting Information for

Hydrothermal synthesis of nitrogen doped graphene nanosheets from carbon nanosheets with enhanced electrocatalytic properties

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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 GO:

Initially, graphene oxide (GO) was synthesized by a modified Hummer's method.[S1a] Graphite powder (1 g) was added to 25 ml of concentrated H_2SO_4 and the mixture was cooled to 0 ºC (on ice). Then, 3 g of $KMnO_4$ was gradually added (temperature was maintained at around <10 ºC throughout the reaction) and was stirred continuously. The mixture was then allowed to cool at room temperature. To this reaction mixture, 50 ml of DI H_2O was added and the temperature was seen to rise up to 55 ºC. Then, 150 ml of DI H_2O was added again and was stirred continuously for 30 minutes. Post stirring, 15 ml of H_2O_2 was added to the mixture and stirred for another 30 minutes. Black coloured saturated slurry was seen to be formed. After saturation,

the slurry was vacuum filtered and was washed with 5 % HCl until the supernatant turned colorless. The resulting solid material obtained was left to dry in ambient conditions.

Synthesis of rGO:

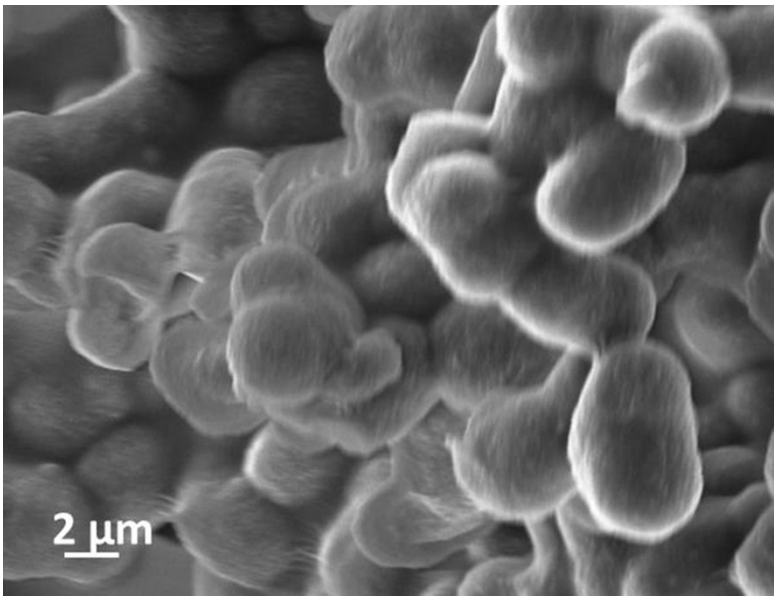
In a typical procedure,[S1b] 20 mg of GO was dispersed in 10 ml of DI H_2O. This dispersion was sonicated for 1h using a Telesonic ultrasonic bath cleanser. The sonicated mixture was then taken in a PTFE lined stainless steel autoclave and heated at 120 ºC for 4 h under autogeneous pressure. The mixture was then washed with acetone and water. The resulting solid was allowed to dry overnight in ambient conditions.

Synthesis of CNS:

In a typical synthesis,[S1c] 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 ^oC for 4h under autogeneous 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 ^oC in hot air oven and was further treated hydrothermally.

SI 2

FESEM of CCM

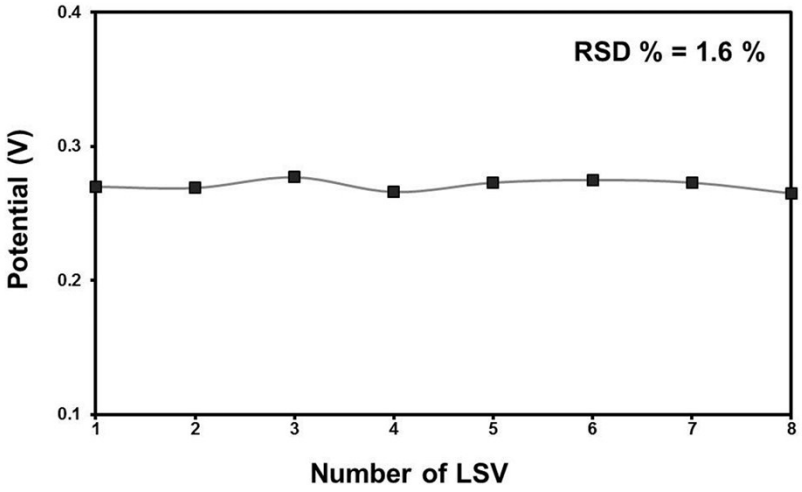


SI 3 Carbon, Hydrogen, Nitrogen and Oxygen percentages from CNS and NGS.

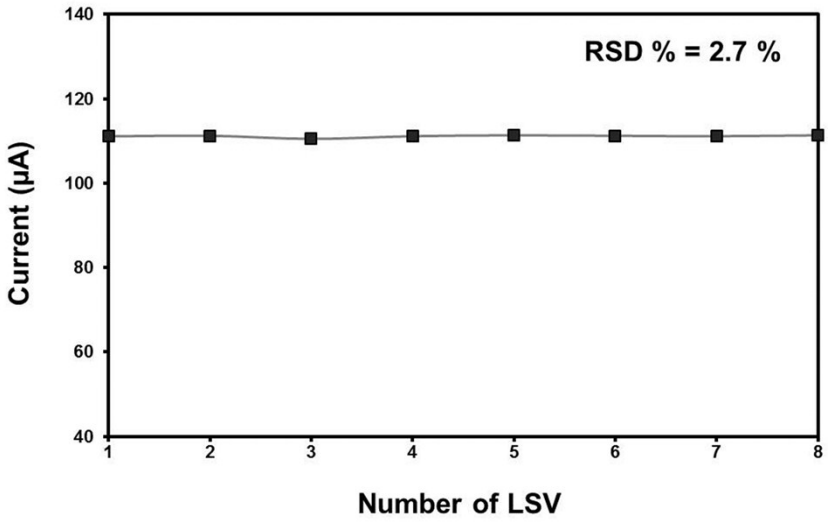
Sample Name	C atom %	O atom %	N atom %	H atom %	C/O ratio	C/N ratio
CNS	81.69	13.12	1.68	3.51	6.2	48.6
NGS	88.12	8.23	1.9	1.75	10.7	46.3

SI 4

NGS modified electrode reproducibility graph for DA detection for 8 LSV cycles (Potential *vs.* LSV)



NGS modified electrode reproducibility graph for DA detection for 8 LSV cycles (Current *vs.* LSV)



References for Supporting Information

[S1a] W. S. O. Hummers, E. Richard, *J. Am. Chem. Soc.* **1958**, *80*, 1339-1339.

[S1b] C. Nethravathi, M. Rajamathi, *Carbon* **2008**, *46*, 1994-1998.

[S1c] W. Wang, S. Chakrabarti, Z. Chen, Z. Yan, M. O. Tade, J. Zou, Q. Li, *J. Mater. Chem. A* **2014**, *2*, 2390-2396.