Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics

Supporting Information

Three-Dimensional B, N-doped Graphene Foam as Metal-free Catalysts for Oxygen Reduction Reaction

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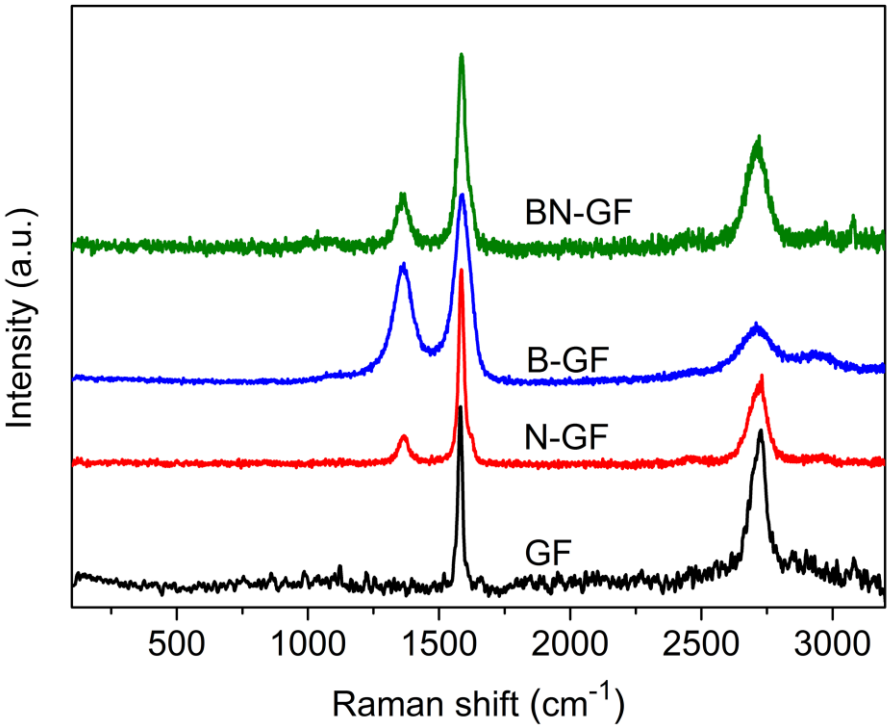

Figure S1. Raman spectra of GF, N-GF, B-GF and BN-GF.

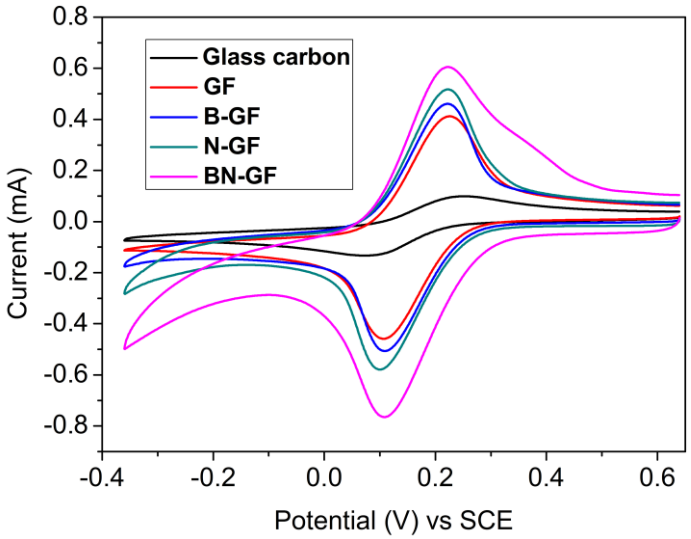

Figure S2. CV curves of glass carbon, GF, B-GF, N-GF and BN-GF in 5 mM $K_3Fe(CN)_6$/0.1 M KCl solution. Scan rate: 50 mV s^{-1}.

The electroactive surface area can be calculated according to the randles-Sevcik equation as follows:

$$A=Ip/2.69*105*n^{3/2}*D^{1/2}*V^{1/2}*C$$

A is electroactive surface area (cm^2), Ip is peak current (A), and n=1, D=4.34*10-6, V is scan rate (V/s), C is concentration. The electroactive surface area of different graphene foam is calculated and listed in the following foam. B or N doping can increase the electroactive surface area.

electrode	Glass carbon	GF	B-GF	N-GF	BN-GF
Surface area (cm^2)	0.19	0.70	0.76	0.84	0.99