Supporting Information

Preparing Dangling Bonds by Nanoholes on Graphene Oxide Nanosheets and Their Enhanced Magnetism

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Table S1. The contents of the selected metal impurity elements in the GO, LHGO, and MHGO samples measured by ICP-MS.

Samples	Mn(ppm)	Fe(ppm)	Co(ppm)	Ni(ppm)
GO	3.66	44.86	0.03	0.93
LHGO	4.13	47.51	0.04	0.44
MHGO	4.64	63.94	0.05	0.99

Because the paramagnetic or ferromagnetic (FM) response of graphene which was induced by dangling bonds, defects and/or functionalization are of several orders of magnitude lower compared to that of $3d$ transition metals, e.g. iron, cobalt, nickel and manganese, ICP-MS was employed to quantify the contents of $3d$ metal impurities and exclude their effect on magnetic properties of as-prepared GO, LHGO, and MHGO. The total concentration of Fe, Co, Ni and Mn in GO, LHGO, and MHGO samples was below 70ppm (Table S1). The increase of magnetic impurity of HGO may be ascribed to the weight loss from the functional groups. Considering the measured concentrations and magnetic moments of the metal impurities, the total χ_{mass} of Fe, Co, Ni and Mn was estimated to 2 orders smaller than as-prepared GO, SGO, and DGO in a 1 kOe field (Fig. 3, 4). The contribution of Fe, Co, Ni and Mn to the samples' χ_{mass} was assumed to be negligible.[20] Undoubtedly the magnetism comes from the intrinsic properties of graphene.[24-26]