Supporting Information

Enhanced MRI relaxivity of aquated Gd^{3+} ions by carboxyphenylated water-soluble graphene nanoribbons

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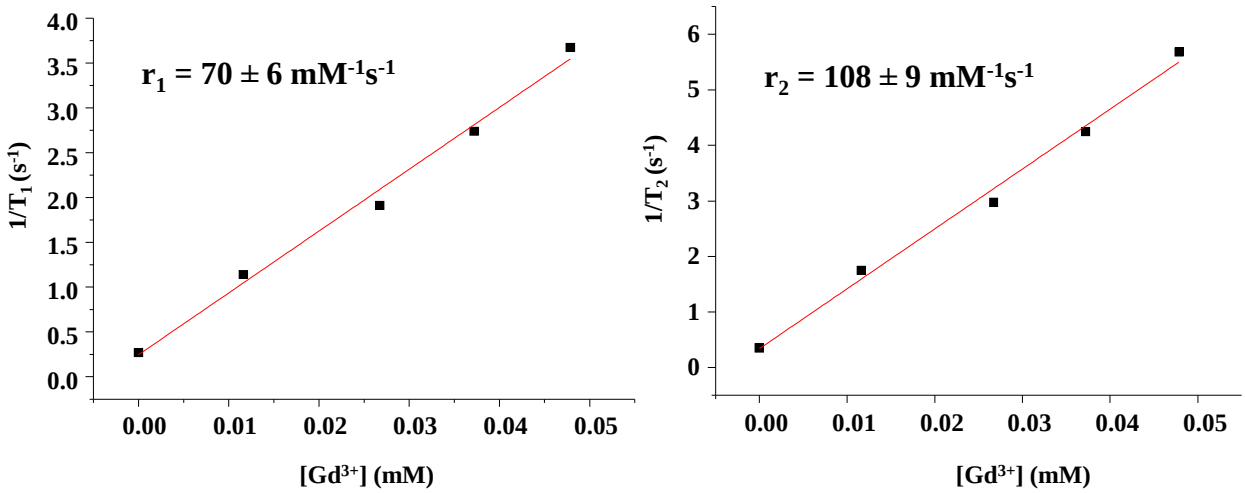

Fig. S1 Plots of $[Gd^{3+}]$ vs $1/T_1$ and $1/T_2$ for the Gd/GNR sample at 1.41 T and 37 °C. The slopes of the least-squared fitted red lines represent the relaxivity (r_1, r_2) values per Gd^{3+} ion.

MRI aquisition paprameters:

The T_1 relaxation times of the samples were measured using an inversion recovery prepared spin echo sequence with the following acquisition parameters: acquisition voxel size: 1.25 * 1.25 * 5 mm^3; TR/TE ms: 15000 ms / 8.8 ms; scan time: 16 min. The experiment was repeated at various inversion times (TIs): 100ms, 300ms, 500ms, 1000ms, 1500ms, 2500ms, 3500ms, and 4500ms (Figure S2). The T_2 relaxation times of the samples were measured using a multi-echo spin echo sequence with the following acquisition parameters: acquisition voxel size: 1.25 * 1.25 * 5 mm^3; TR/TE ms: 15000 ms / 25 ms; 32 echos were measured with echo spacing of 25ms (Figure S3); Scan time: 16 min.

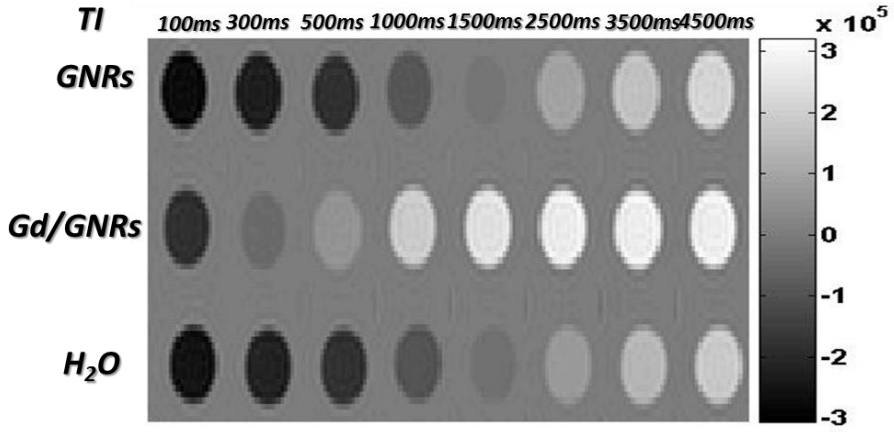

Fig. S2 T_1-weighted MRI inversion recovery phantom images acquired at different inversion times (TI) for the GNR, Gd/GNR samples in aqueous solutions and H_2O at 1.5 T.

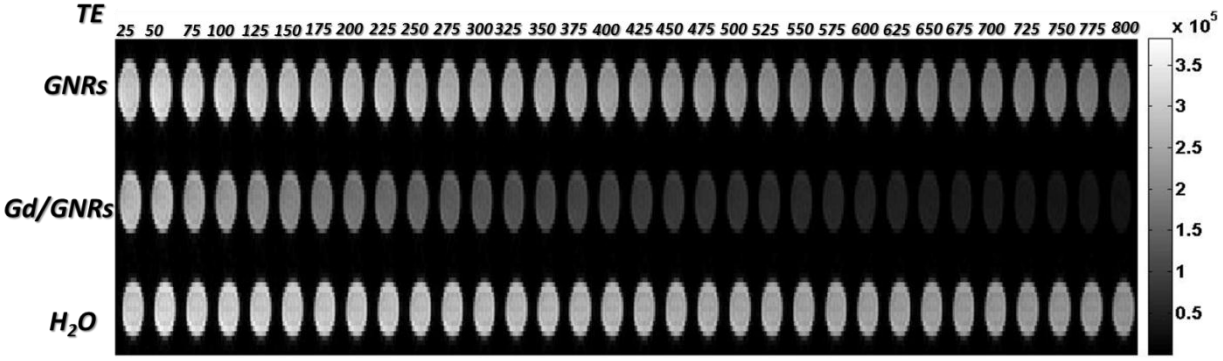

Fig. S3 T_2 -weighted MRI spin-echo phantom images acquired at different echo times (TE) for the GNR, Gd/GNR samples in aqueous solutions and H_2O at 1.5 T.