

Electronic Supporting Information

**Facile preparation of a MRI contrast agent with high longitudinal relaxivity
based on gadolinium ions-loaded graphene oxide**

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1. Raman spectra

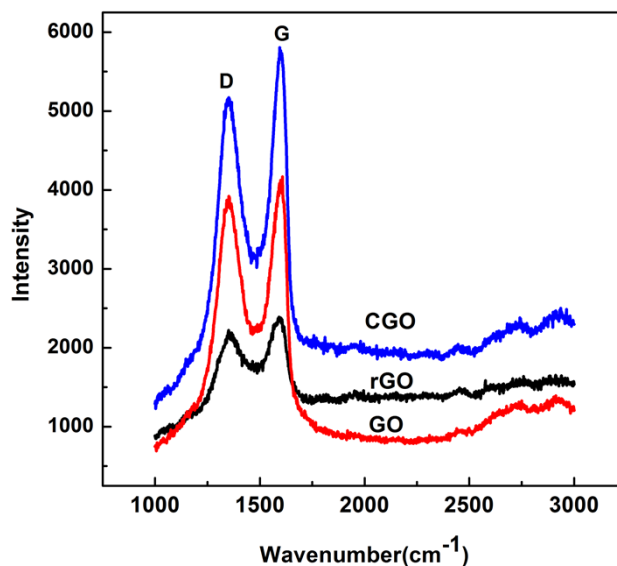


Figure S1 Raman spectra of CGO, rGO and GO

2. Core-level XPS analysis

Table S1 Molar ratio of C=O to C-O bond in GO, rGO and CGO, respectively.

| Sample | Bond | C-C (%) | C-O (%) | C=O (%) | C=O/C-O |
|--------|------|---------|---------|---------|---------|
| GO | | 26.2 | 50.5 | 23.3 | 0.46 |
| rGO | | 60.4 | 26.8 | 12.8 | 0.48 |
| CGO | | 58.5 | 21.2 | 20.3 | 0.96 |

3. FT-IR spectra

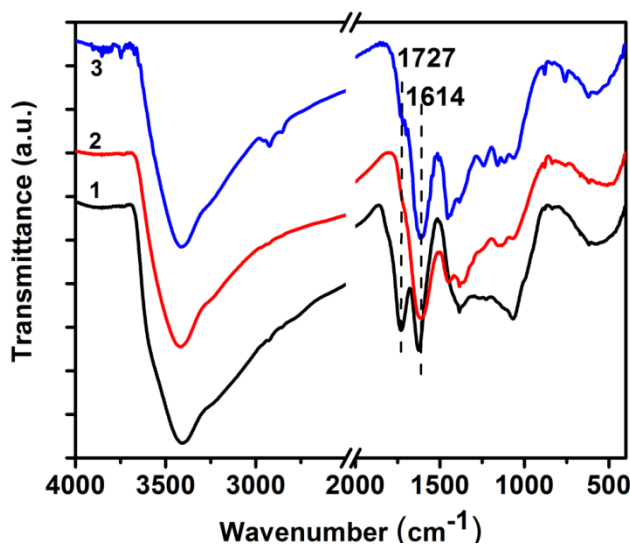


Figure S2 IR spectra of GO (1), CGO (2), and Gd³⁺@CGO (3)

4. Cytotoxicity

The cytotoxicities of the GO and CGO were assessed on HeLa cells, respectively, and were performed through the CCK-8 assay (Signalway Antibody, SAB).¹ HeLa cells were planted in the 96-well plates (5×10^3 cell per well) and then cultured with RPMI1640 (Hyclone) in a humidified incubator with 5% CO₂ at 37 °C. After an incubation period of 24 h, different concentration (10, 20, 40, 80, 100, 200 $\mu\text{g mL}^{-1}$) of the GO and CGO were added to each well of the 96-well plates, respectively. And cells cultured in the medium without GO nor CGO were taken as the control. After 24h incubation, CCK-8 solution was added to each well and incubated for another 4h at 37 °C, the optical density (OD) of each well was measured with a Microplate Reader at 450 nm. The cell viability (%) = $(OD_{\text{sample}} - OD_{\text{blank}}) / (OD_{\text{control}} - OD_{\text{blank}}) \times 100\%$,² where the subscript *blank* is the wells without Hela cells.

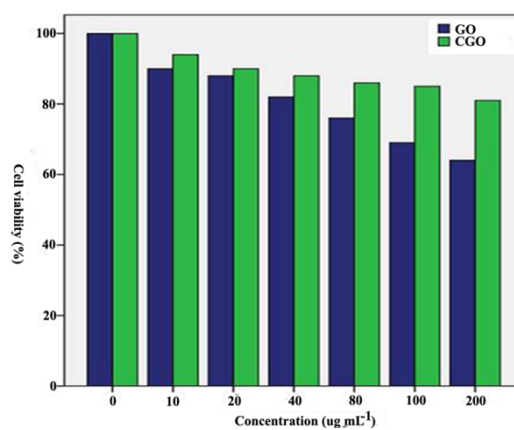


Figure S3 Viability of HeLa cells incubated in various concentrations of GO and CGO for 24 h.

References

1. H. Yue, W. Wei, Z. Yue, B. Wang, N. Luo, Y. Gao, D. Ma, G. Ma and Z. Su, *Biomaterials*, 2012.
2. Y. Chang, S.-T. Yang, J.-H. Liu, E. Dong, Y. Wang, A. Cao, Y. Liu and H. Wang, *Toxicology letters*, 2011, 200, 201-210.