

Electronic Supplementary Information for

Near Infrared Fluorescence-Magnetic Resonance Dual-Modal Imaging  
with Cy5-Labeled, Gd-Al Co-Doped Mesoporous Silica Nanoparticles

Ai Gao<sup>1</sup>, Dan Zhang<sup>1,2</sup>, Xue-Bo Yin<sup>1,\*</sup>

<sup>1</sup> Research Center for Analytical Sciences, College of Chemistry, Nankai University, State Key Laboratory of Medicinal Chemical Biology, Tianjin Key Laboratory of Biosensing and Molecular Recognition, and Collaborative Innovation Center of Chemical Science and Engineering (Tianjin), Tianjin, 300071, China

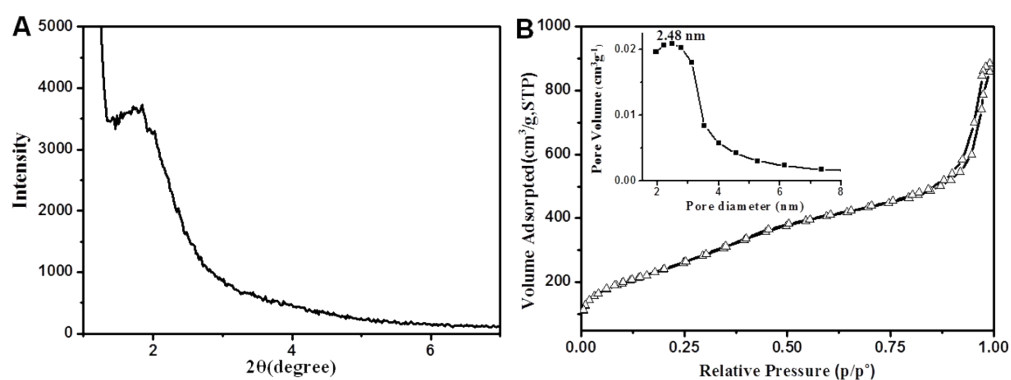
<sup>2</sup> Tianjin Key Laboratory of Aquatic Science and Technology, School of Environmental and Municipal Engineering, Tianjin Chengjian University, Tianjin, 300384, China

\* E-mail: xbyin@nankai.edu.cn; Fax: (86) 22 2350 3034

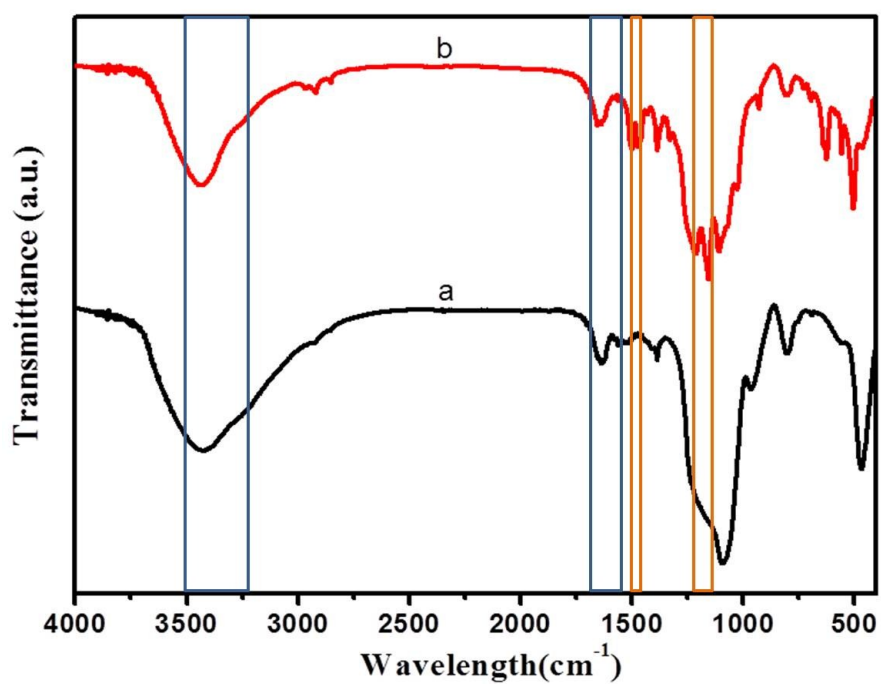
**Table S1** The amount of TEOS and APTES used in synthesizing Gd-Al@MSNs-NH<sub>2</sub>, and the zeta-potential of the respective nanoparticles in PBS (pH 7.4).

| Sample #  | Total TEOS (mmol) | APTES (mmol) | Amines (mol%) | Zeta potential (mV) |
|-----------|-------------------|--------------|---------------|---------------------|
| 1         | 3.2               | 0            | 0             | -34.1±2.9           |
| 2         | 3.2               | 0.021        | 0.65          | -19.5±3.3           |
| 3         | 3.2               | 0.042        | 1.3           | 6.2±3.6             |
| <b>4*</b> | <b>3.2</b>        | <b>0.063</b> | <b>2.0</b>    | <b>25.3±3.0</b>     |
| 5         | 3.2               | 0.105        | 3.3           | 32.8±2.5            |

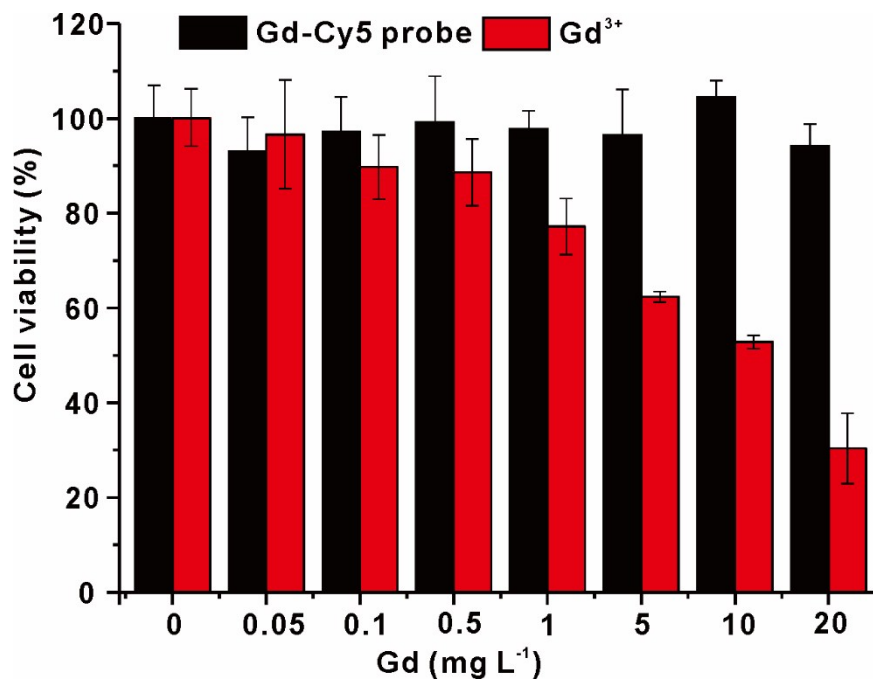
\* The optimal Gd-Al@MSNs-NH<sub>2</sub> and its respective data.



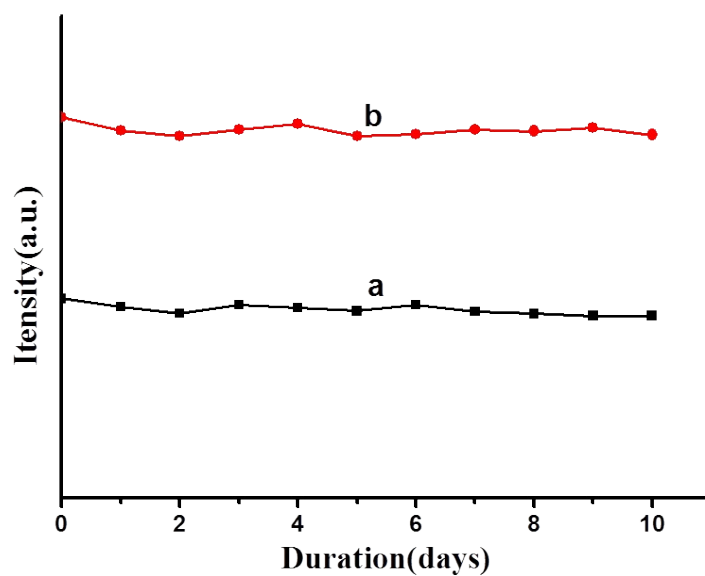
**Fig. S1** (A) XRD spectrum of Gd-Al@MSNs-NH<sub>2</sub>. (B) N<sub>2</sub> adsorption-desorption isotherms of Gd-Al@MSNs-NH<sub>2</sub>. Inset is the pore size distribution curve derived from the adsorption branch.



**Fig. S2** FTIR spectrum of (a) Gd-Al@MSNs-NH<sub>2</sub> and (b) Gd-Al@MSNs-Cy5.



**Fig. S3** Cell viability of HepG2 cells incubated with Gd-Cy5 probe, Gd<sup>3+</sup> ions at different concentrations.



**Fig. S4** Long-term stability of (a) fluorescence and (b) relaxation rate of Gd-Al@MSNs-Cy5.