

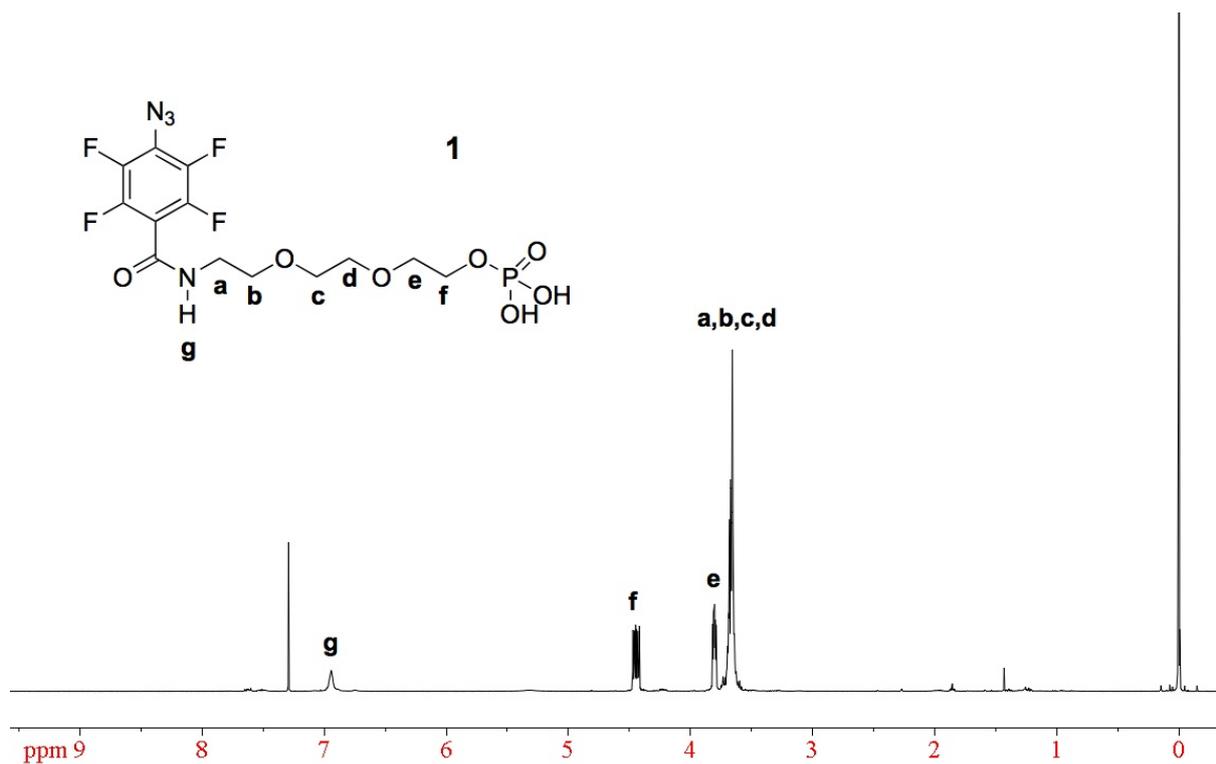
## Supporting Information

### **Photoinitiated Coupling of Unmodified Monosaccharides to Iron Oxide Nanoparticles for Sensing Proteins and Bacteria**

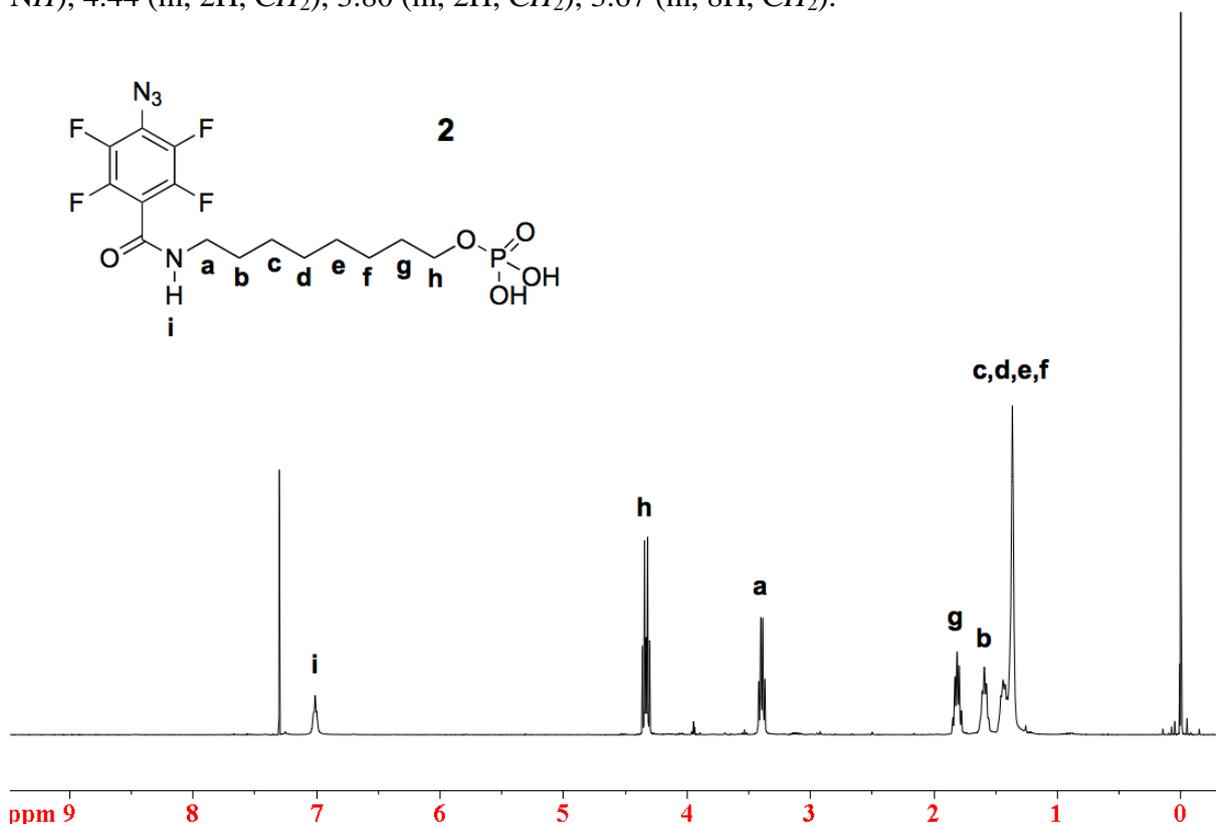
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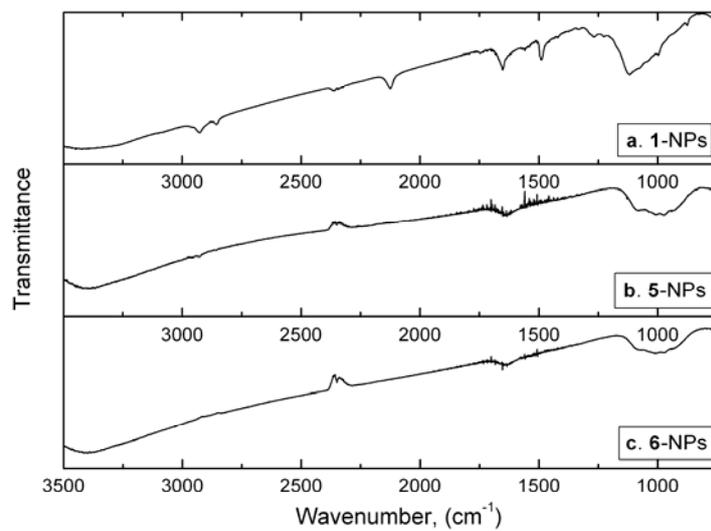
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**Figure S1.** The proton NMR spectrum of **1**. <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>, δ): 6.94 (br, 1H, NH), 4.44 (m, 2H, CH<sub>2</sub>), 3.80 (m, 2H, CH<sub>2</sub>), 3.67 (m, 8H, CH<sub>2</sub>).



**Figure S2.** The proton NMR spectrum of **2**. <sup>1</sup>H NMR (400 MHz, CDCl<sub>3</sub>, δ): 7.01 (s, 1H, NH), 4.33 (m, 2H, CH<sub>2</sub>), 3.39 (q, 2H, J = 7.0 Hz, CH<sub>2</sub>), 1.81 (m, 2H, CH<sub>2</sub>), 1.59 (t, 2H, J = 7.0 Hz, CH<sub>2</sub>), 1.36 (m, 8H, CH<sub>2</sub>).



**Figure S3.** FTIR spectra of PFPA-phosphate ligand **1**-functionalized hematite nanoparticles (a), hematite nanoparticles after treating with compound **5** (b) and **6** (c).