

Electronic Supporting Information

Formation of iron oxide nanoparticle-loaded γ -polyglutamic acid nanogels for MR imaging of tumors[†]

Jianzhi Zhu,^{a1} Chen Peng,^{b1} Wenjie Sun,^a Zhibo Yu,^c Benqing Zhou,^a Du Li,^c Yu Luo,^a Ling Ding,^a Mingwu Shen,^a and Xiangyang Shi^{a,c*}

^a College of Chemistry, Chemical Engineering and Biotechnology, Donghua University, Shanghai 201620, People's Republic of China

^b Department of Radiology, Shanghai Tenth People's Hospital, School of Medicine, Tongji University, Shanghai 200072, People's Republic of China

^c State Key Laboratory for Modification of Chemical Fibers and Polymer Materials, College of Materials Science and Engineering, Donghua University, Shanghai 201620, People's Republic of China

*To whom correspondence should be addressed. E-mail addresses: xshi@dhu.edu.cn

¹ Authors contributed equally to this work.

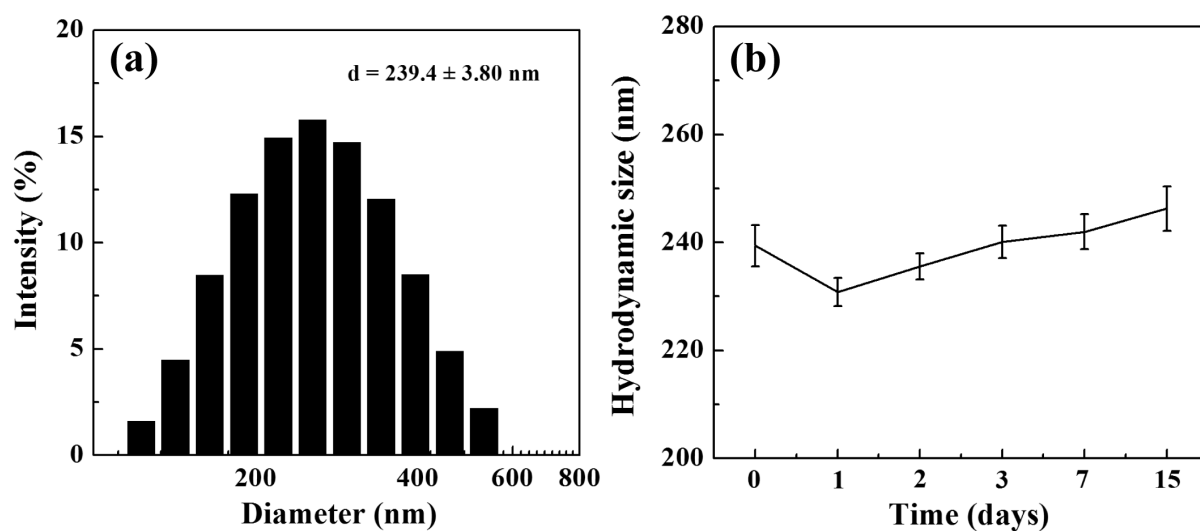


Fig. S1. (a) Hydrodynamic size distribution of the γ -PGA/PEI-Fe₃O₄ NGs in water; (b) hydrodynamic size of the γ -PGA/PEI-Fe₃O₄ NGs in water as a function of storage time.

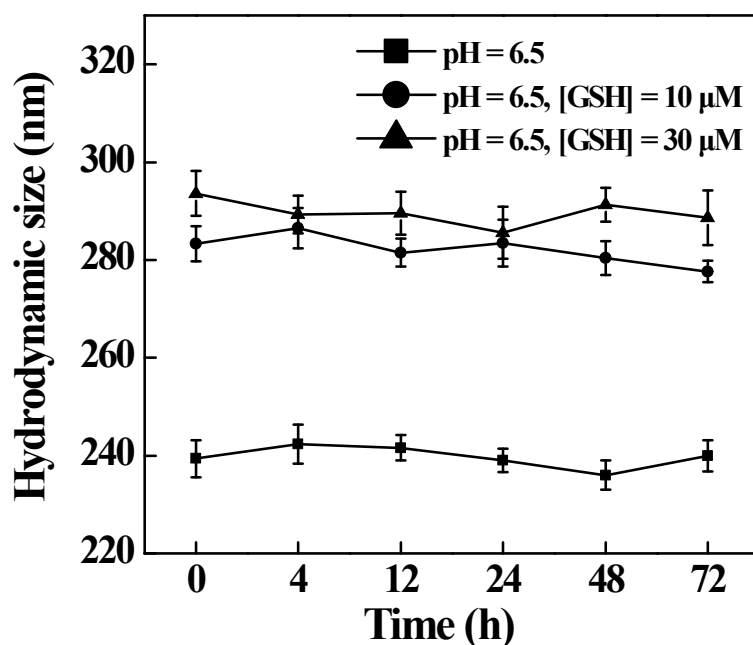


Fig. S2. Hydrodynamic size of the γ -PGA/PEI-Fe₃O₄ NGs in acidic aqueous solution (pH = 6.5) and in acidic aqueous solution (pH = 6.5) containing high GSH concentrations (10 or 30 μ M), respectively.

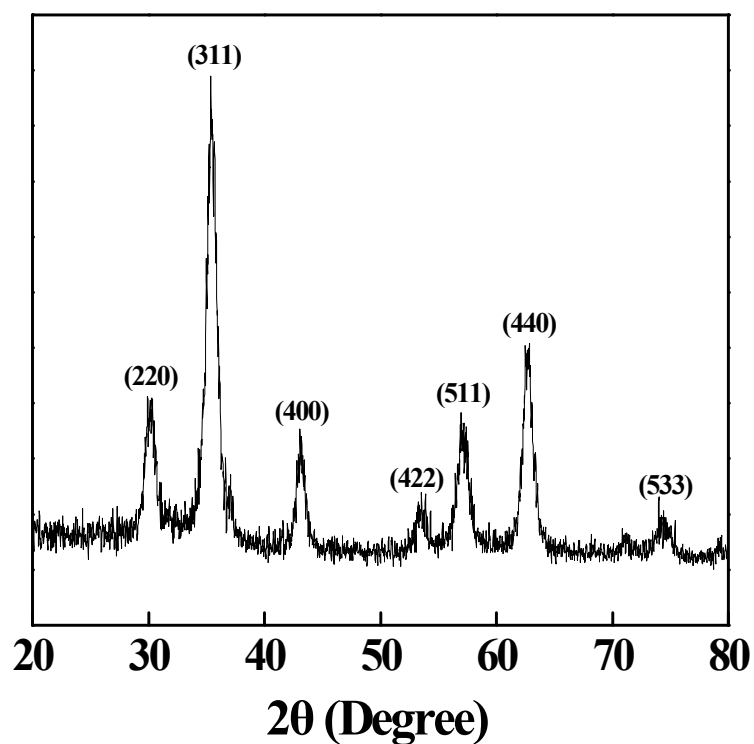


Fig. S3. XRD pattern of γ -PGA/PEI-Fe₃O₄ NGs.

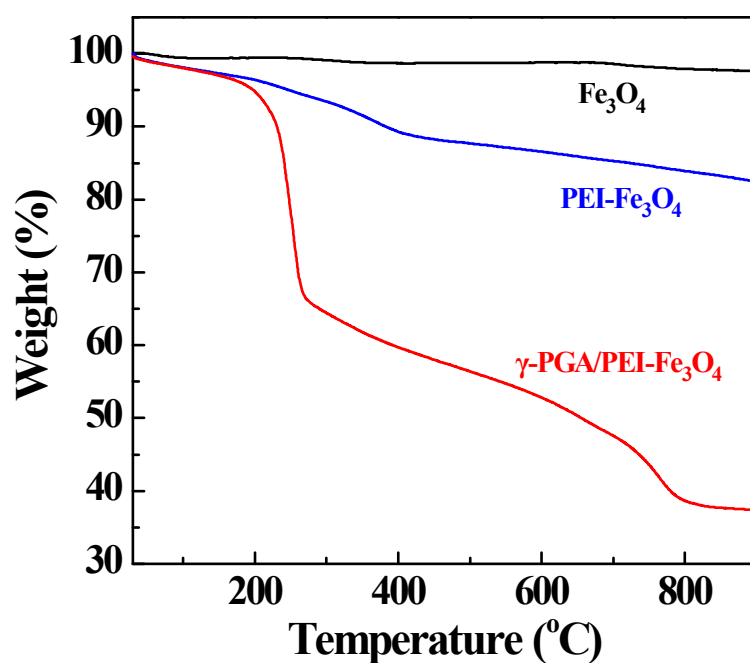


Fig. S4. TGA curves of naked Fe₃O₄ NPs, PEI-Fe₃O₄ NPs, and γ -PGA/PEI-Fe₃O₄ NGs.

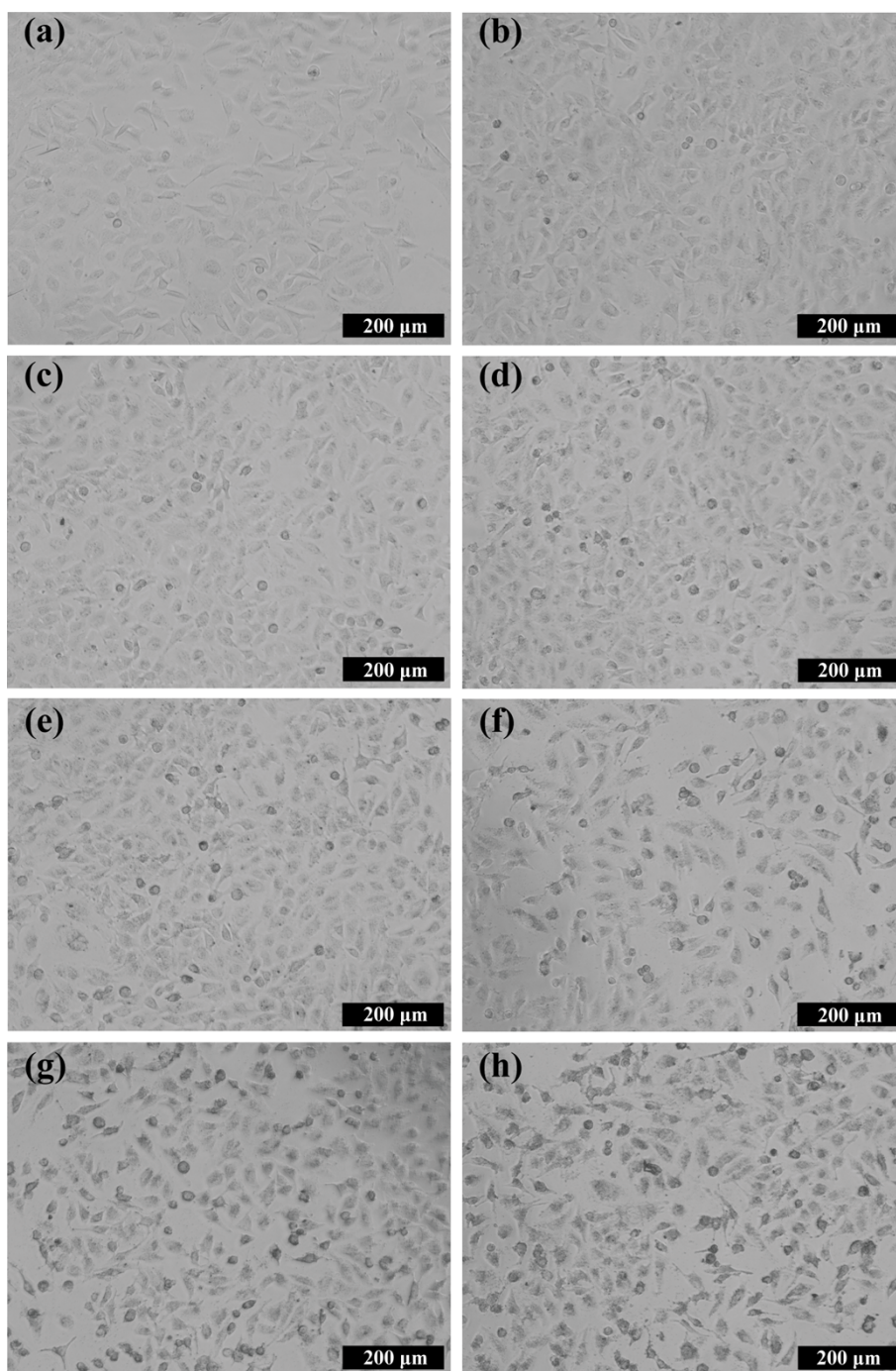


Fig. S5. Phase contrast microscopic images of HeLa cells treated with PBS (a), and γ -PGA/PEI- Fe_3O_4 NGs at Fe concentrations of 0.01 mM (b), 0.02 mM (c), 0.04 mM (d), 0.06 mM (e), 0.08 mM (f), 0.1 mM (g), and 0.2 mM (h) for 24 h.

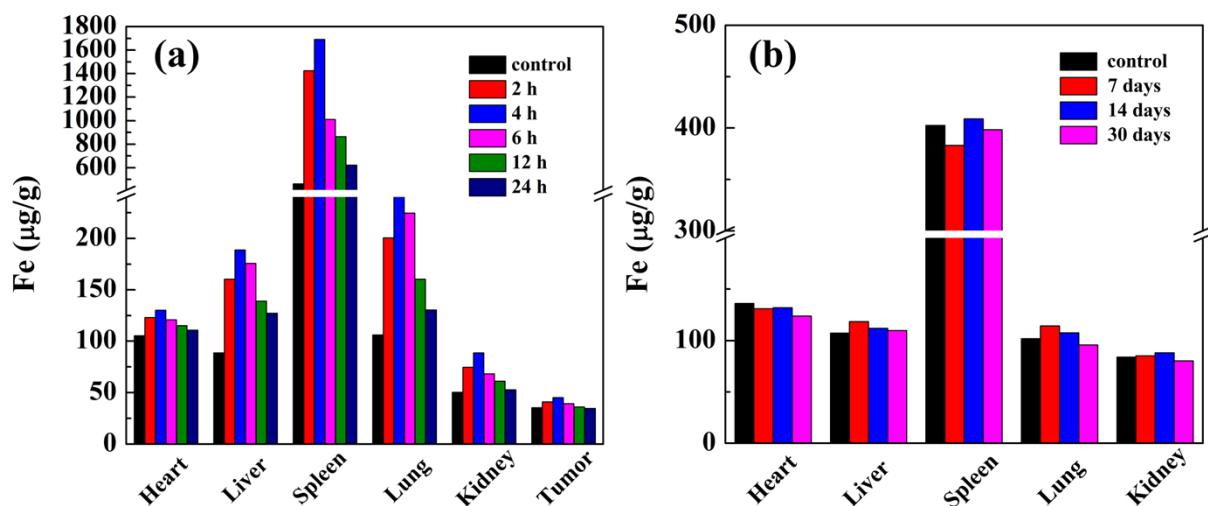


Fig. S6. (a) Biodistribution of Fe in the major organs of the nude mice including the heart, liver, spleen, lung, kidney, and tumor at 2, 4, 6, 12, and 24 h post-intravenous injection of the γ -PGA/PEI- Fe_3O_4 NGs ($[\text{Fe}] = 51.04 \text{ mM}$, 0.2 mL PBS , for each mouse); (b) Biodistribution of Fe in the major organs of the healthy mice including the heart, liver, spleen, lung, and kidney at 7, 14, and 30 days post-intravenous injection of the γ -PGA/PEI- Fe_3O_4 NGs ($[\text{Fe}] = 51.04 \text{ mM}$, 0.2 mL PBS , for each mouse).