nanomaterials

MDPI

Supplementary Materials

Charge-Modulated Synthesis of Highly Stable Iron Oxide Nanoparticles for In Vitro and In Vivo Toxicity Evaluation

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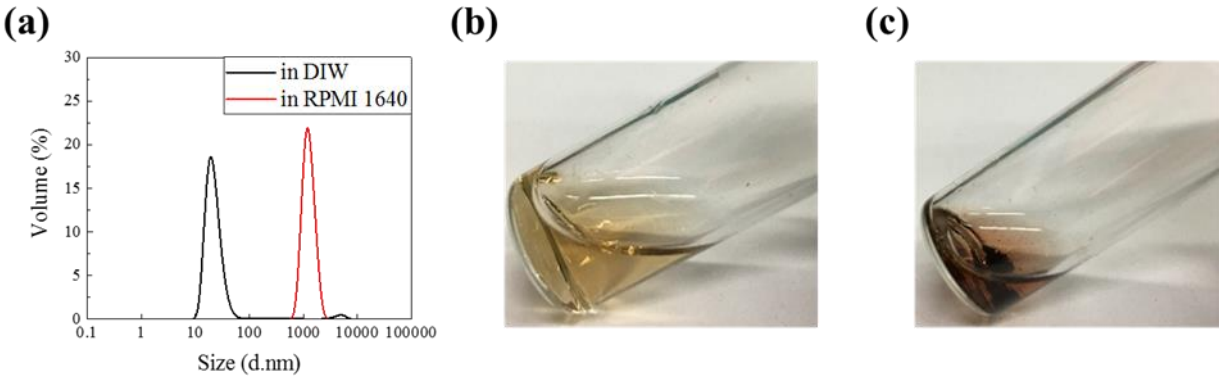

Figure S1. Stability test of IONPs coated with ligands having 80% positively functional groups in DIW and RPMI 1640 media. (**a**) H.D. of the IONPs dispersed in water and RPMI 1640 medium. Camera image of the IONPs (**b**) well-dispersed in water and (**c**) agglomerated in RPMI 1640 medium.

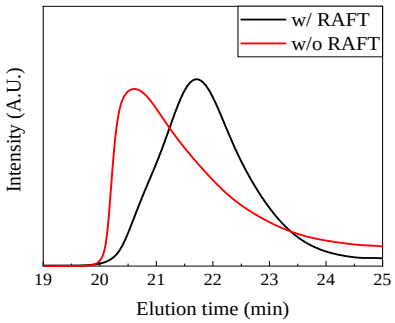

Figure S2. GPC of (n) ligand in THF showing narrow PDI with a [Monomer]: [RAFT] ratio of 20:1 and [AIBN]: [RAFT] ratio of 1:1 (black line), along with poor PDI without a RAFT agent (red line).

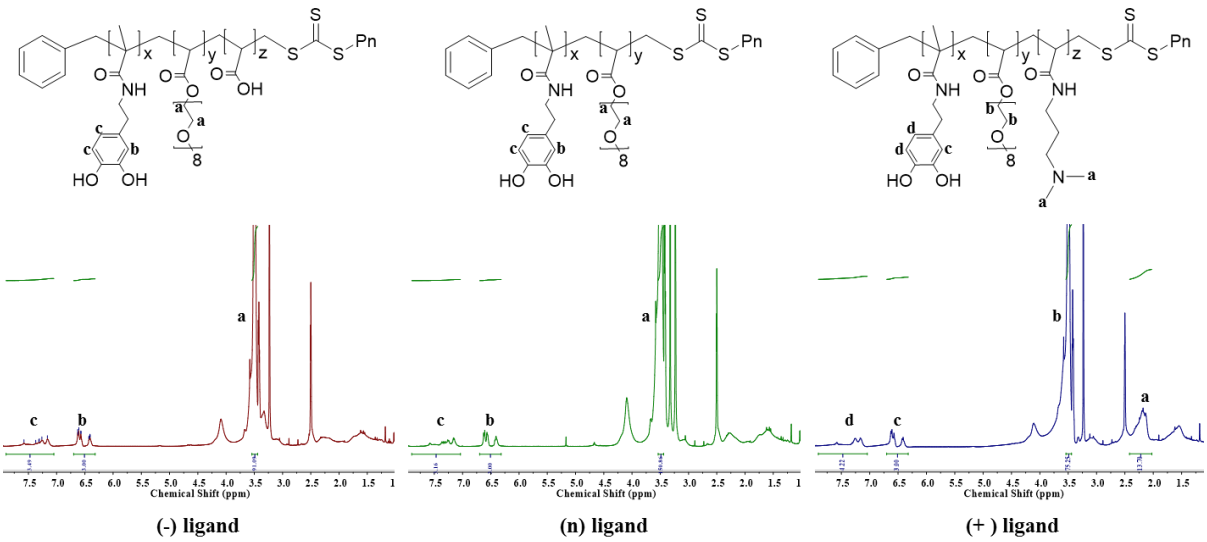

Figure S3. [1]H-NMR spectra of the three polymeric ligands measured in DMSO-d6.

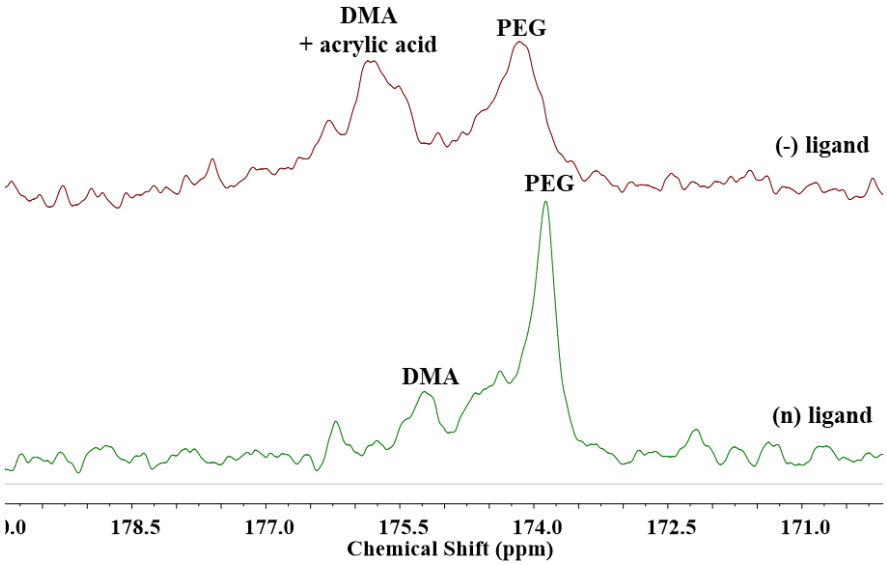

Figure S4. IG [13]C NMR spectra of (−) ligand and (n) ligand measured in DMSO-d6. The composition of DMA + PEG and functional group in the (−) ligand were 48% and 52%, respectively, by IG [13]C NMR and those of DMA and PEG in the (−) ligand were 25% and 75%, respectively, by [1]H NMR. Based on these data, we finally calculated the proportion of DMA, PEG, and the functional group of (n) ligand to be 17%, 52%, and 31%, respectively. The compositions of DMA and PEG in the (n) ligand were 18% and 82%, respectively, by IG [13]C NMR and it corresponded with the [1]H NMR data. These results support the validity of the (−) ligand data.

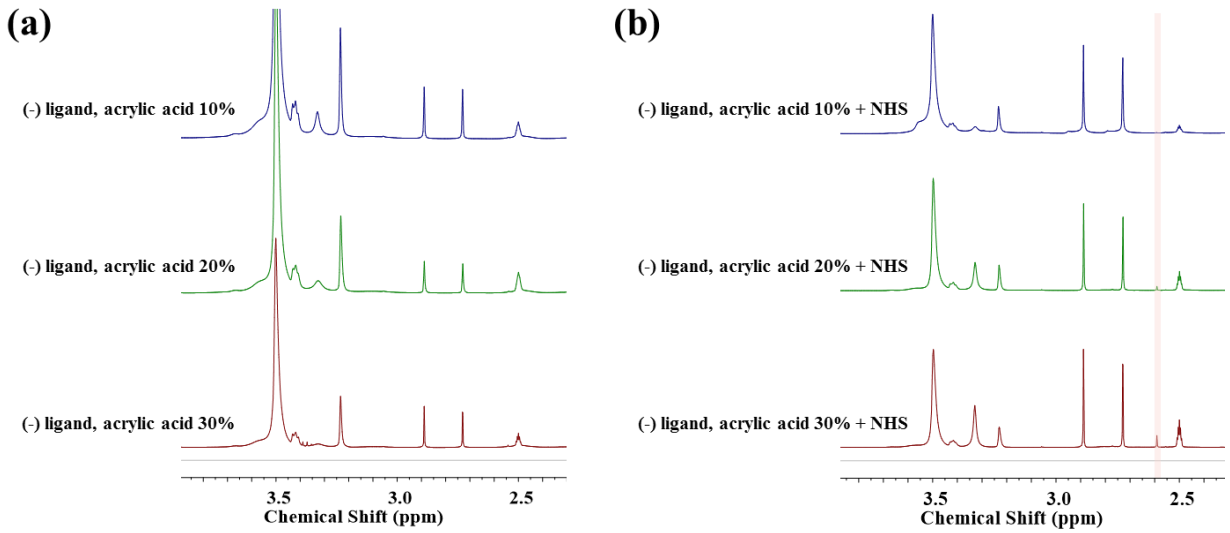

Figure S5. ^{1}H-NMR spectra of (−) ligand (**a**) with different ratios of acrylic acid and (**b**) after conjugation with NHS measured in DMSO-d6.

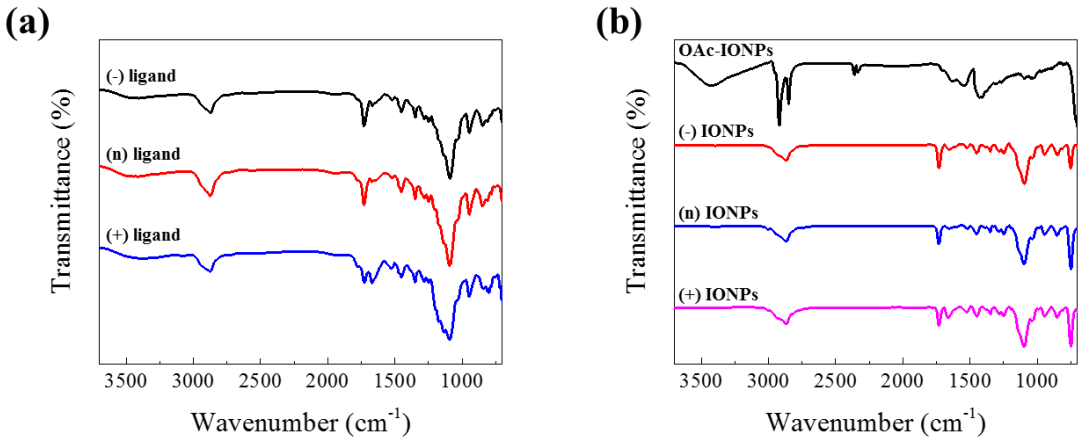

Figure S6. FT-IR spectra of (**a**) the three charged OAc-IONPs and (**b**) three charged IONPs after the ligand exchange of OAc-IONPs.

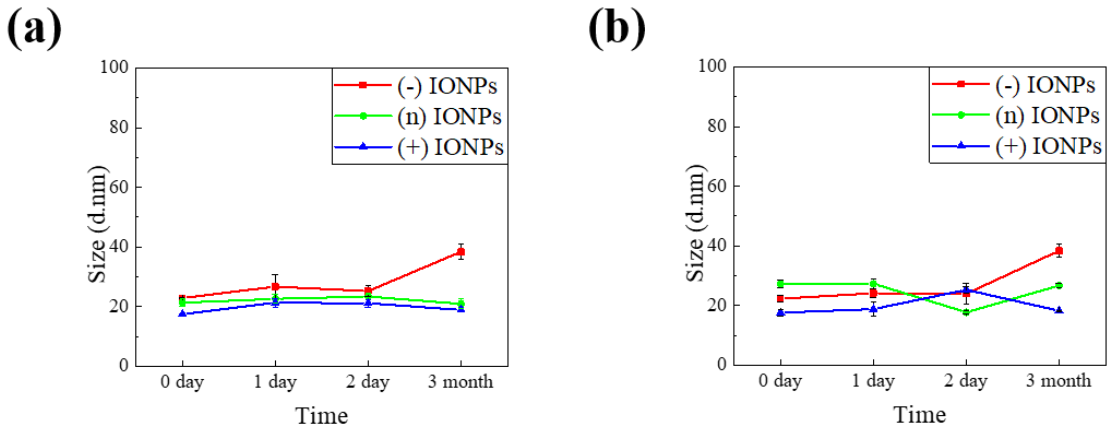

Figure S7. Colloidal stability of three charged IONPs in cell culture media. H.D of three charged IONPs (**a**) in RPMI1640 media and (**b**) in DMEM media until 3 month.

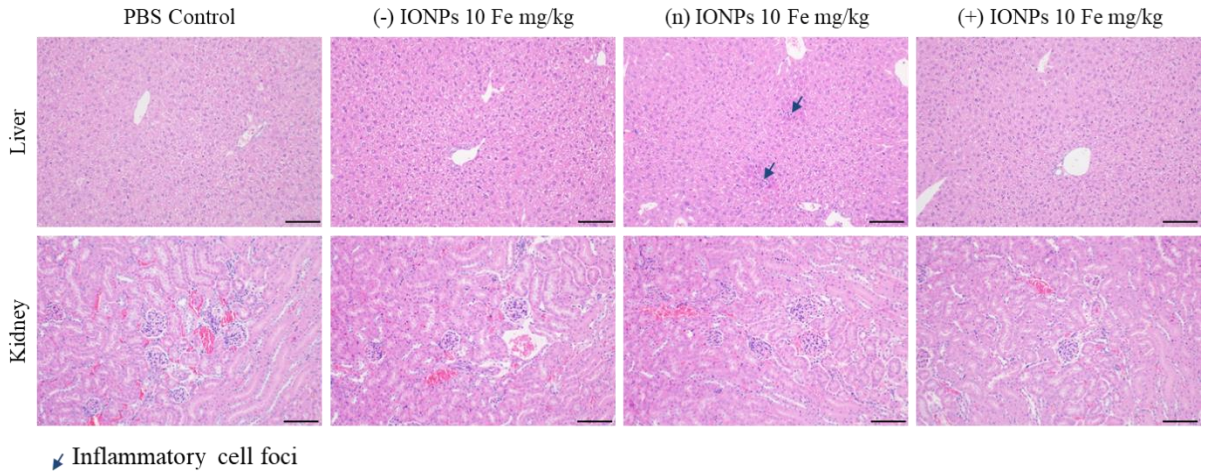

Figure S8. Histological image of liver and kidney in mice for three differently charged IONPs. Magnification = X200, Scale bar = 100 μm.