

Electronic Supplementary Information (ESI)

Novel and Efficient MR active aqueous colloidal Fe₃O₄ nanoassemblies

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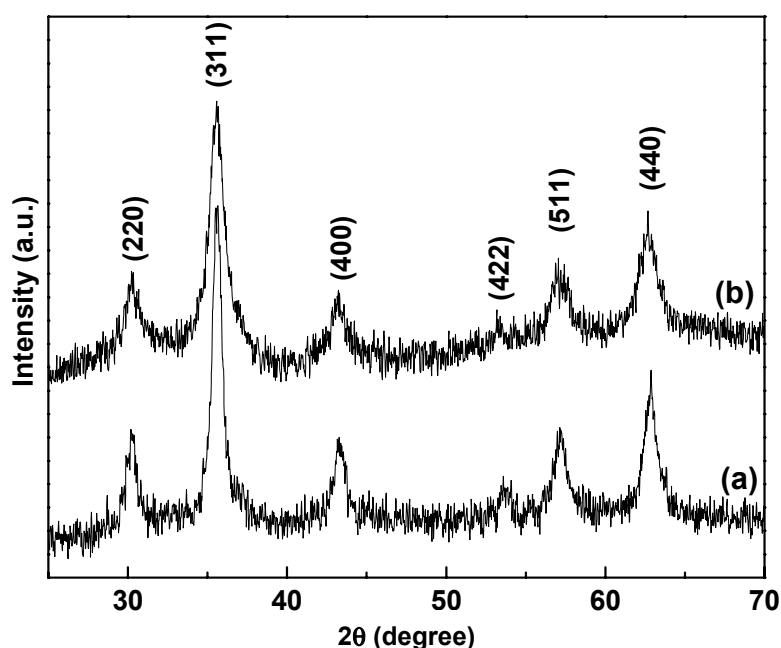


Fig. S1. XRD patterns of (a) Fe₃O₄ MNNA and (b) Fe₃O₄ MNP samples (position and relative intensities of all diffraction peaks well matched with those from the JCPDS card 75-1609 of magnetite).

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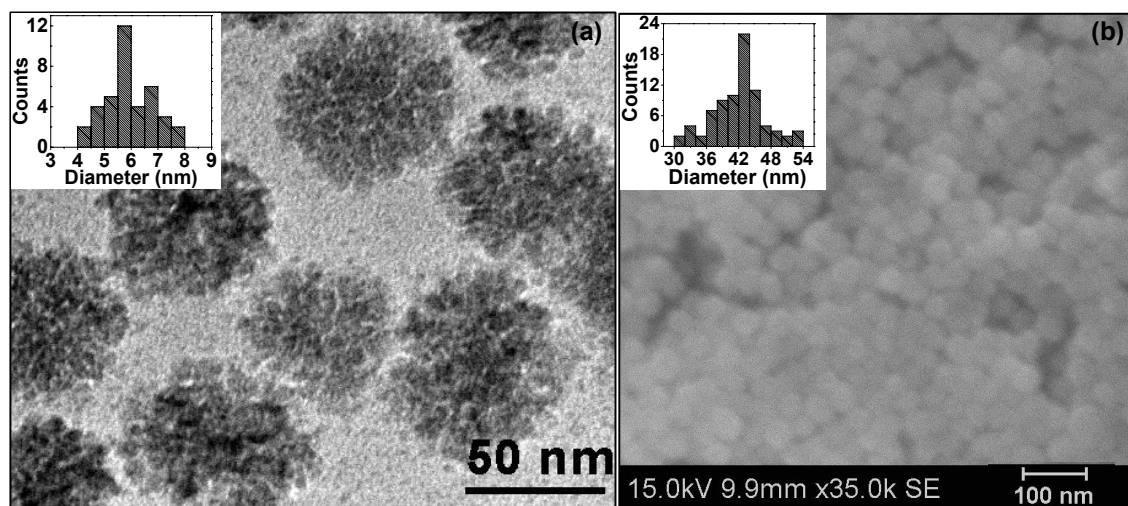


Fig. S2. (a) Low magnification TEM micrograph and (b) large area SEM micrograph of Fe_3O_4 MNNA samples. Insets of (a) shows the size distribution of nanoparticles assembled in a single Fe_3O_4 MNNA and inset of (b) shows the size distribution of Fe_3O_4 MNNA.

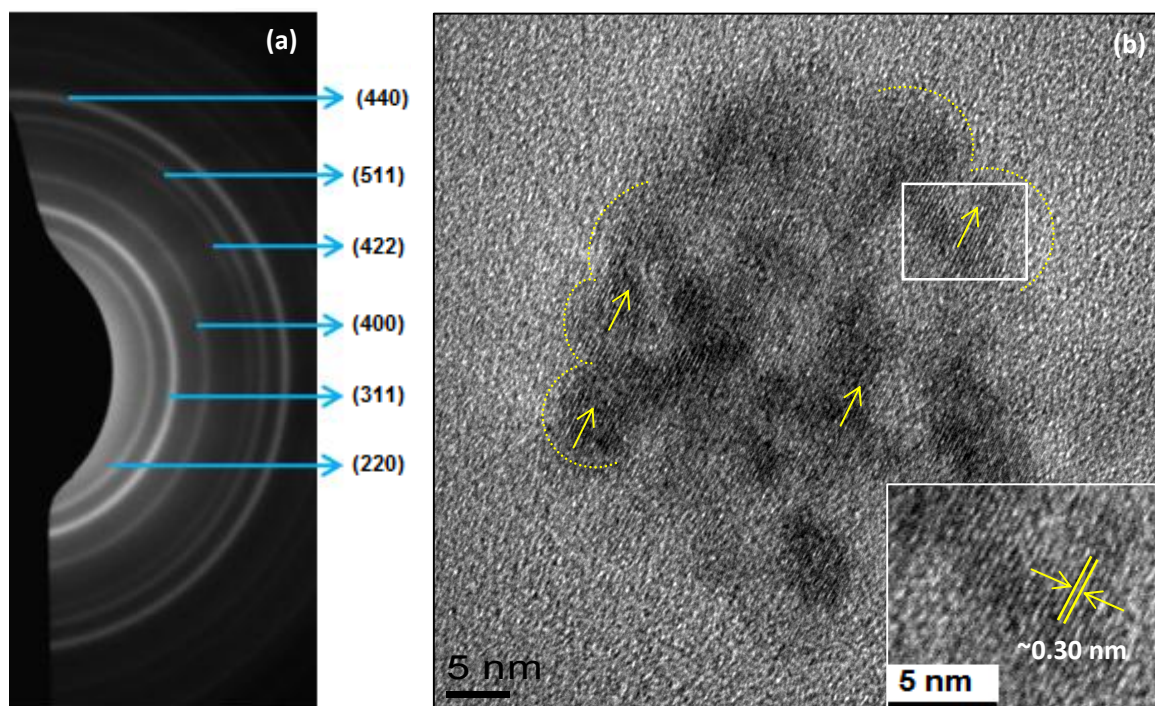


Fig. S3. (a) Electron diffraction pattern of Fe₃O₄ MNNA and (b) high resolution TEM image of Fe₃O₄ MNNA sphere (yellow coloured arrow marks indicate the direction of orientation of nanoparticles assembled in MNNA and inset shows the magnified image of the square marked region). The electron diffraction pattern of Fe₃O₄ MNP was also similar to that of Fe₃O₄ MMNA.

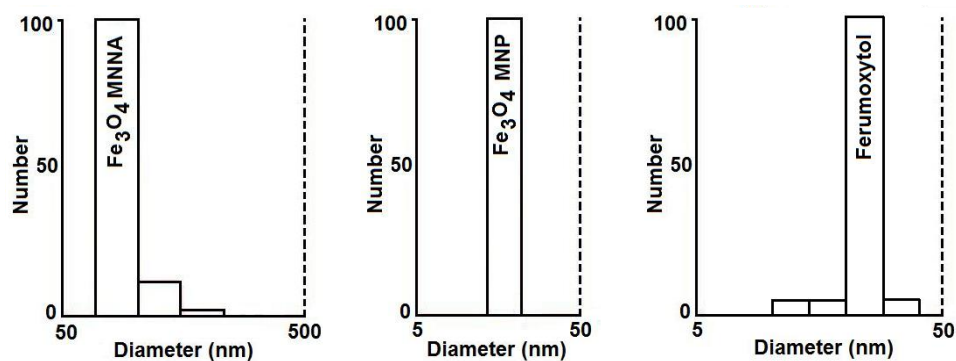


Fig. S4. DLS measurements of Fe₃O₄ MNNA, Fe₃O₄ MNP and ferumoxytol in aqueous medium showing mean hydrodynamic diameter of 90, 17 and 25 nm ($\sigma < 5\%$), respectively (x-axis in log scale)

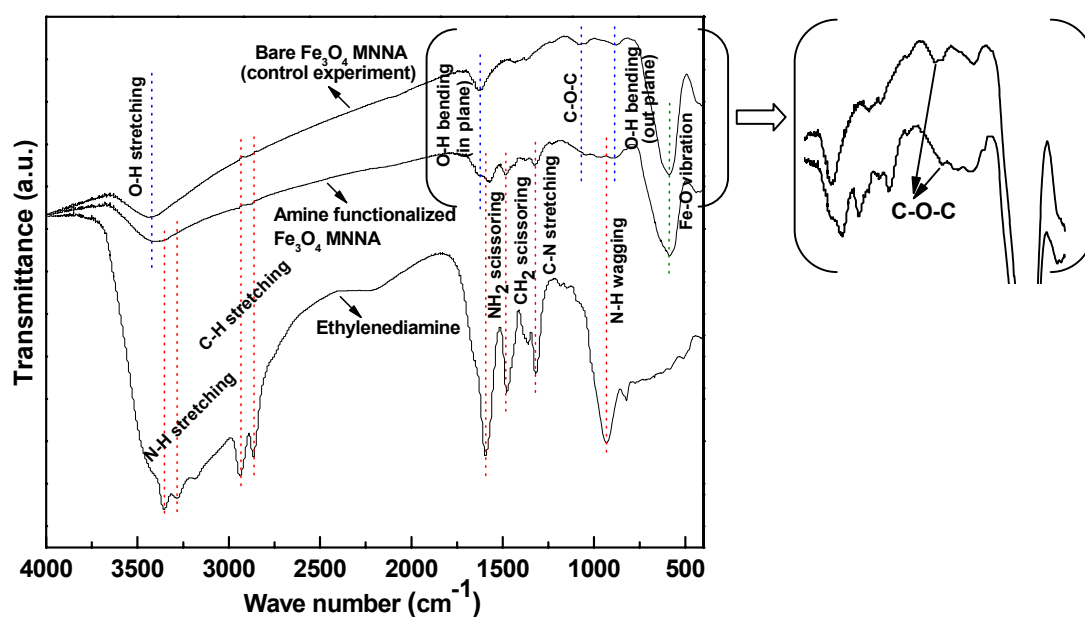


Fig. S5. FTIR spectra of amine functionalization of Fe₃O₄ MNNA, bare Fe₃O₄ MNNA (control experiment: Fe₃O₄ MNNA synthesized in absence of EDA following a similar process) and ethylenediamine.

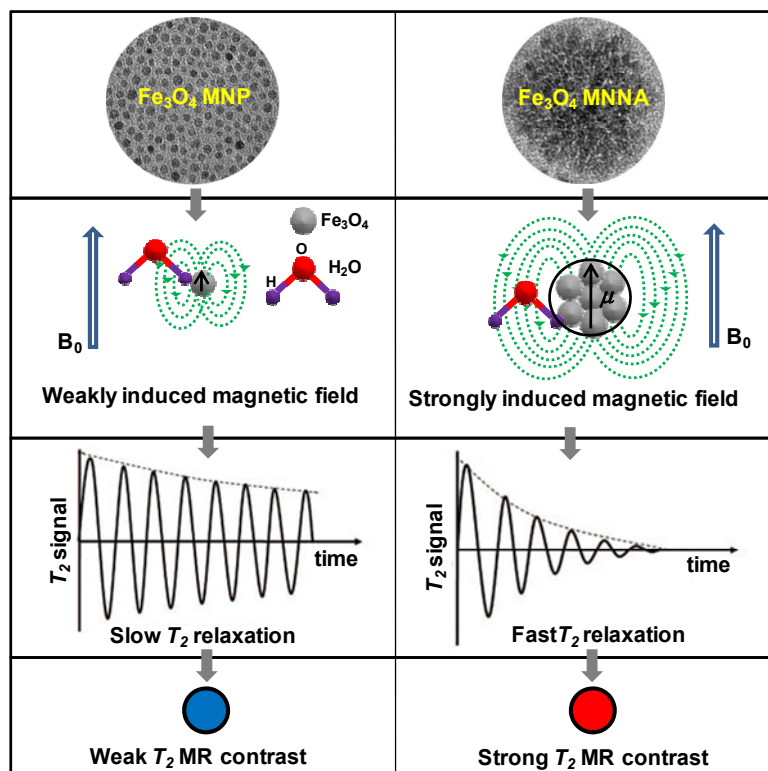


Fig. S6. A schematic representation of the effect of magnetic field on MR contrast properties of Fe_3O_4 MNP and Fe_3O_4 MNNA

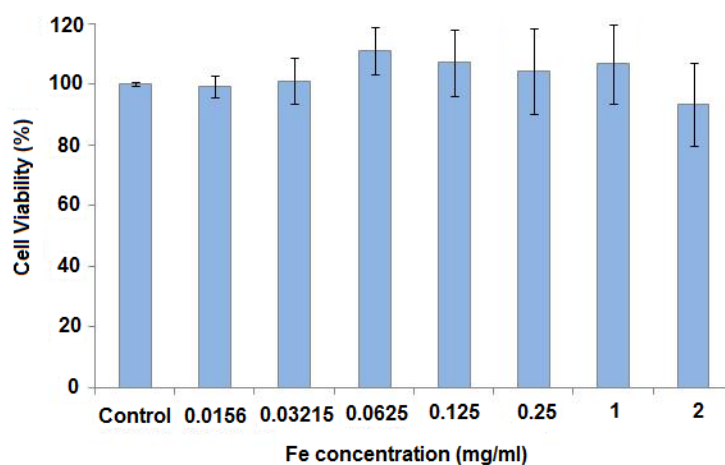


Fig. S7. Percentage viability of HeLa cells after 24 h incubation of stable aqueous suspension of amine functionalized Fe_3O_4 MNNA (control: viability of HeLa cells without Fe_3O_4 MNNA). The results are shown as mean $\pm$ standard deviation ($n = 4$).