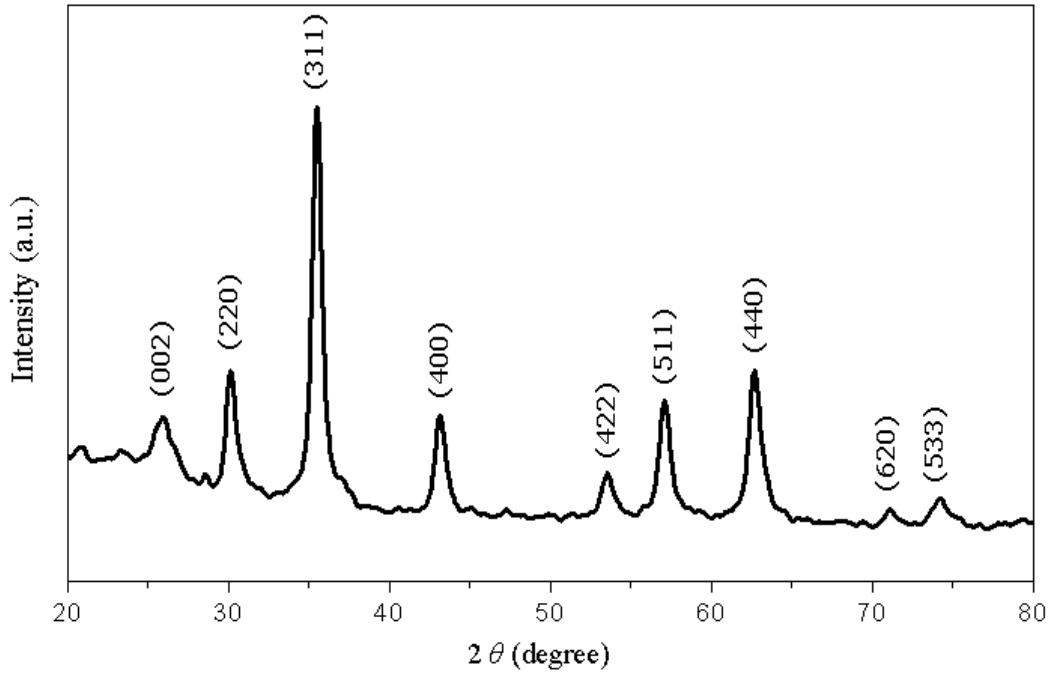

Fig. S1 The XRD pattern of magnetic MWNTs-Fe_3O_4 nanomaterials.

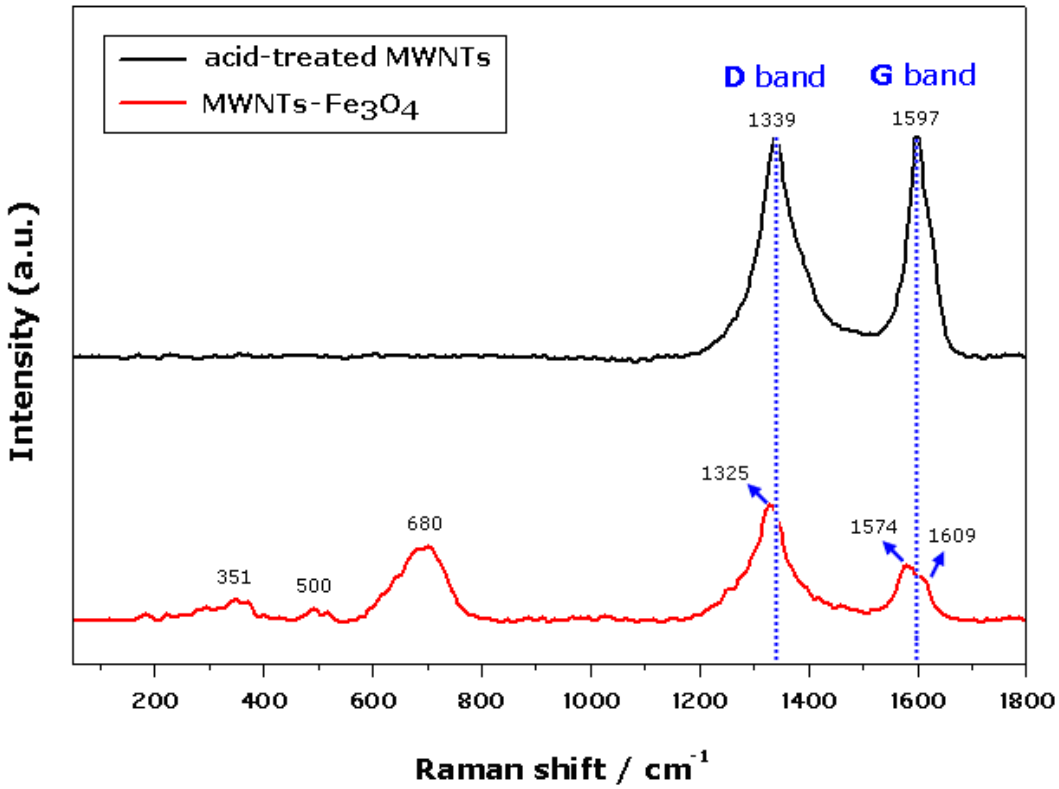

Fig. S2 The Raman spectra of acid-treated MWNTs and magnetic MWNTs-Fe_3O_4 nanomaterials. The Raman spectrum of acid-treated MWNTs showed the similar intensity of D bands (1339 cm^{-1}) in comparison to G bands (1597 cm^{-1}), which was due to the presence of more defects at the surface of MWNTs. A small shift in G band and D band peaks was observed in the case of magnetic MWNTs-Fe_3O_4 nanocomposites. Along with a shift in G and D bands, the characteristic band centered at 680 cm^{-1} was observed at lower Raman shift values in the magnetic MWNTs-Fe_3O_4. This band indicated that the magnetite nanoparticles were successfully immobilized on the surface of MWNTs.

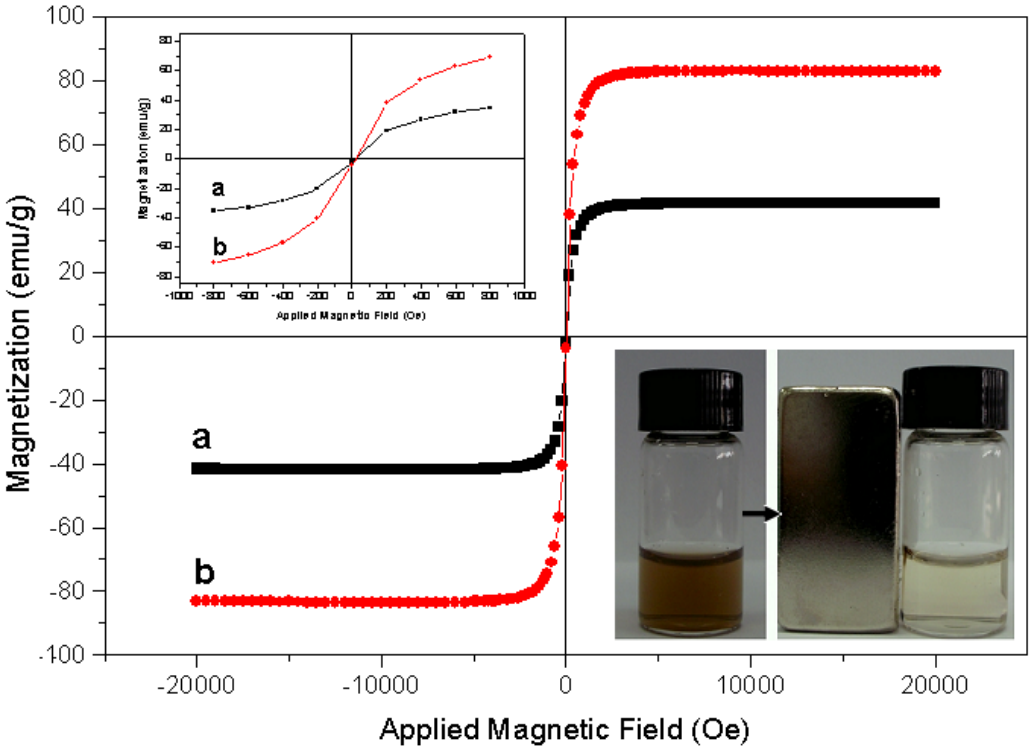

Fig. S3 The hysteresis loops of a) MWNTs-Fe_3O_4 and b) Fe_3O_4 nanoparticles. The two nanoparticles exhibited a superparamagnetic behavior, that is, no remanence was detected at room temperature (above inset). Meanwhile, the PL-MWNTs-Fe_3O_4 nanomaterials in their homogeneous dispersion showed fast moment to the applied magnetic field (2000 Oe) (below inset).

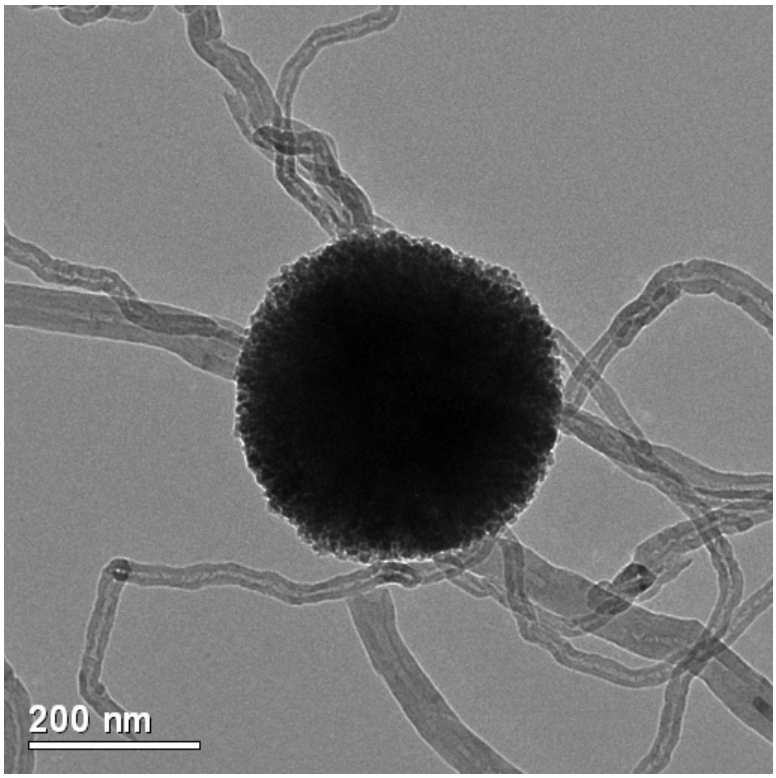

Fig. S4 Representative TEM image of the synthesized magnetic MWNTs-Fe_3O_4 nanomaterials with octopus claw-like nanostructures using NaAc.

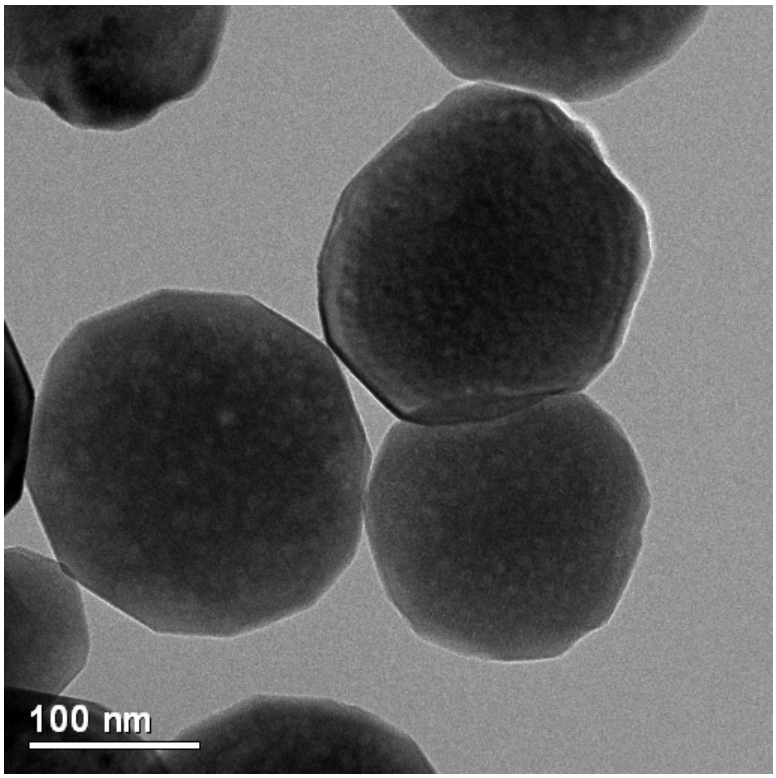

Fig. S5 Representative TEM image of the synthesized magnetite nanoparticles.

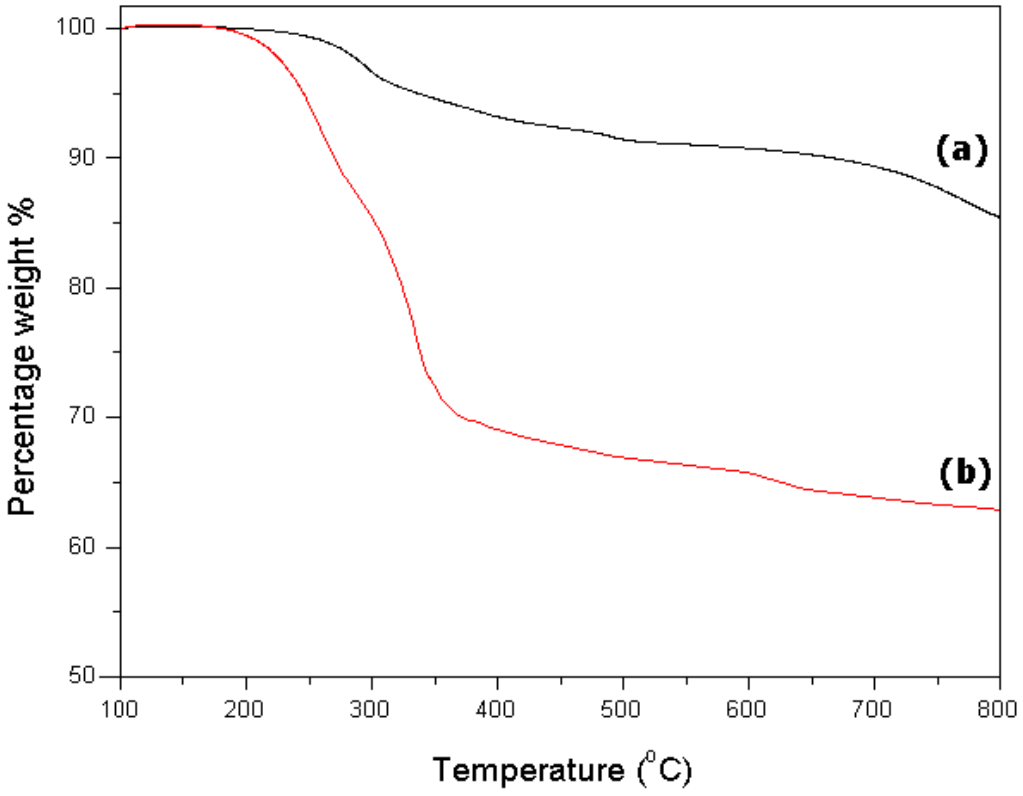

Fig. S6 TGA of (a) MWNTs-Fe_3O_4 and (b) PL-MWNTs-Fe_3O_4. The result indicated that about 22 wt% polyethylene glycol based on the total weight of the MWNTs-Fe_3O_4 could be covalent.

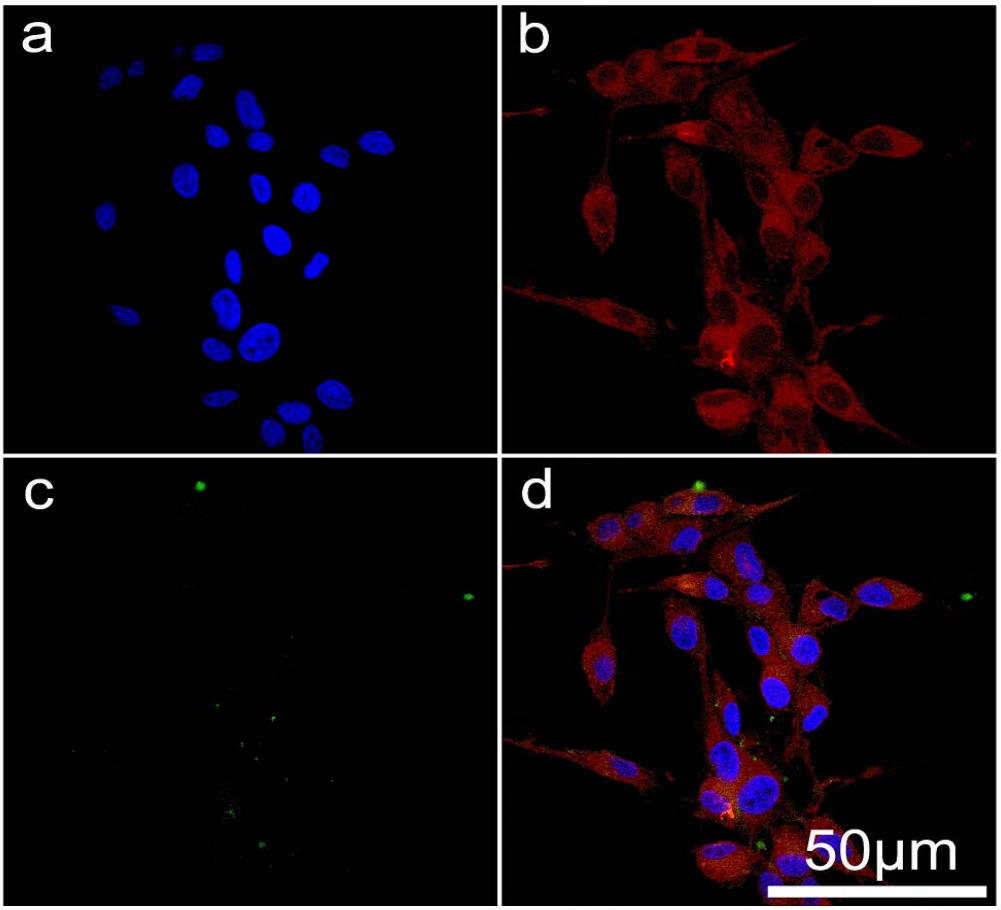

Fig. S7 Confocal fluorescence microscopy images of FITC uptake by U87 cancer cells. The control experiment was investigated by using FITC instead of FITC-labeled nanomaterials in our study, hardly any green fluorescence of FITC was observed, which showed that FITC-labeled MWNTs-Fe_3O_4 nanomaterials could be used as fluorescent probes for cell imaging.

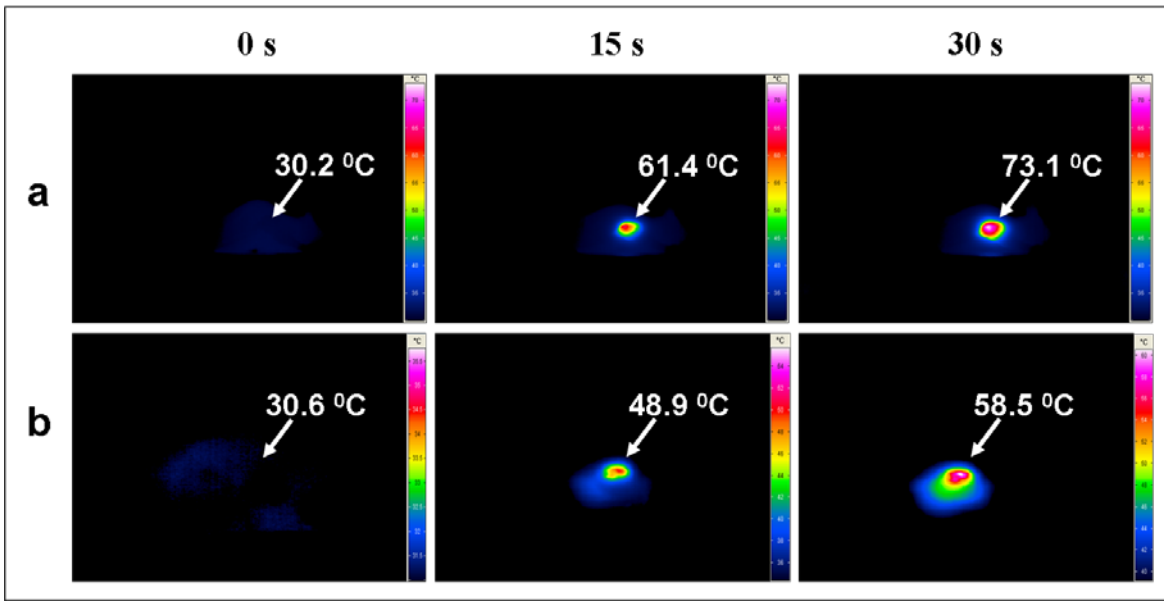

Fig. S8 Infrared thermal images of (a) PL-MWNTs-Fe_3O_4-injected and (b) PL-MWNTs-injected U87 tumor sample at different time points (0, 15, 30 sec) under NIR laser irradiation.

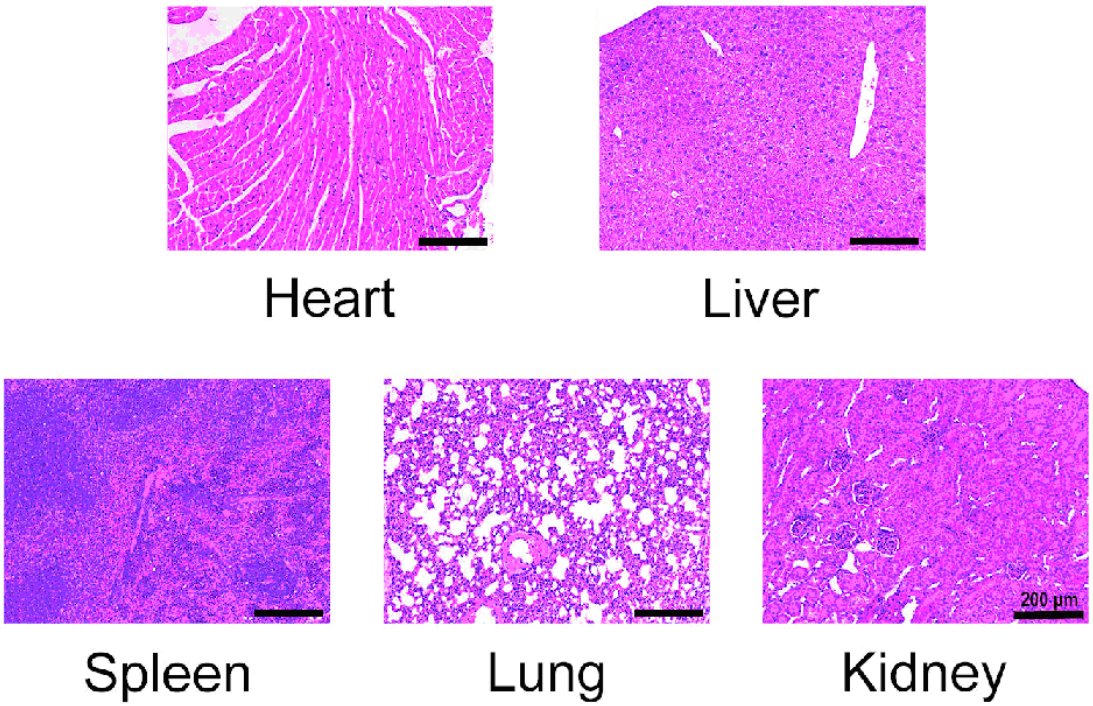

Fig. S9 Histological analysis of surviving mice following PL-MWNTs-Fe_3O_4 nanomaterials-based photothermal therapy reveals no overt pathological changes. No significant lesions were detected.