

Figure S1. The structural characterization of samples. (A) TEM images of SiO₂ nanoparticles, scale bar represent 200 nm. Histogram of size distribution for the (B) SiO₂, (C) ZrO₂ and (D) M-MZNs nanoparticles. (E) Zeta potentials of ZrO₂, M-MZNs and M-MZNs-PEG.

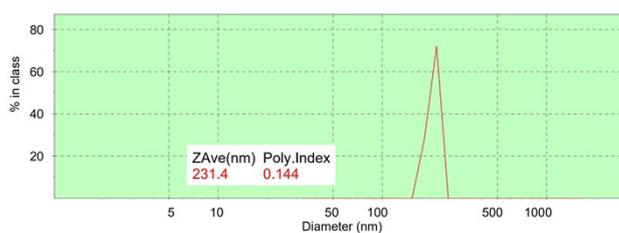


Figure S2 Hydrodynamic diameter and polydispersity index of Fe₃O₄@ZrO₂-PEG



Figure S3 *In vivo* CT and T2W MR images of a tumor bearing mouse before and after intratumoral injection of M-MZNs-DOX.