# Electronic supplementary information for:

## Magnet-activatable nanoliposomes as intracellular bubble microreactors to enhance drug delivery efficacy and burst cancer cells

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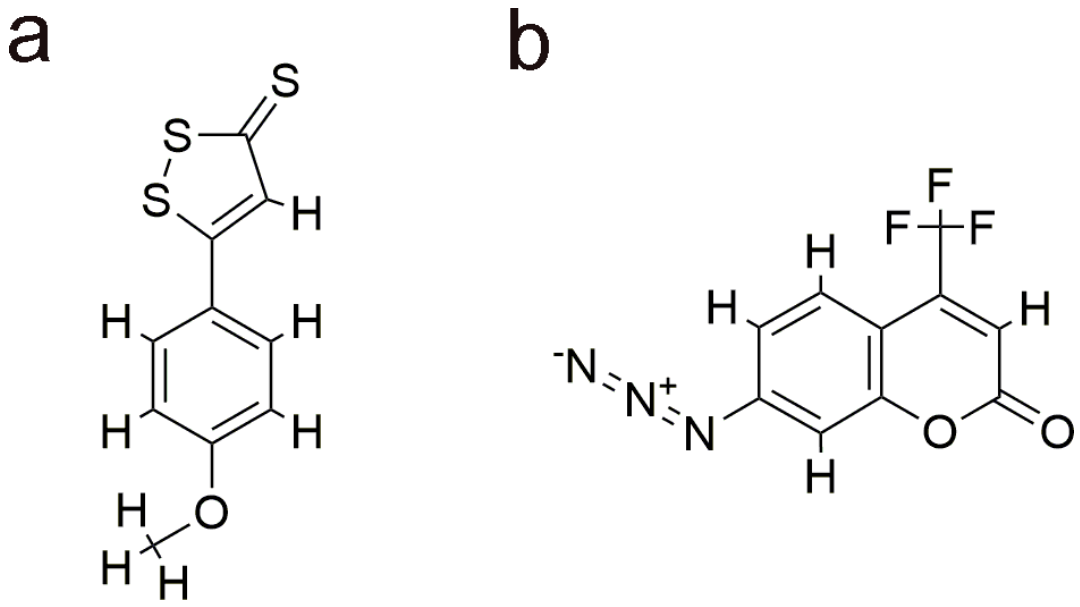


**Fig. S1** The chemical structures of ADT(a) and $CF_3$-$N_3$(b).

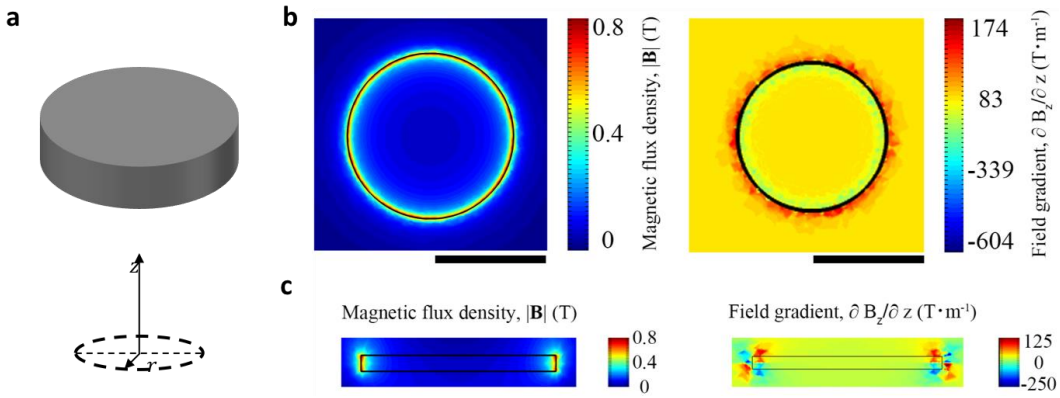


**Fig. S2** The magnetic flux density and the field gradient *in vitro*. (a) Diagram of the magnet (H × D= 2 mm × 30 mm). The magnet is magnetized along the Z direction. (b) The magnetic flux density and One component of the magnetic flux density gradient under the overhead view, $\partial B\ z/\partial z$, scale bar = 20 mm. (c) The magnetic flux density and One component of the magnetic flux density gradient in the side view, $\partial Bz/\partial z$. Scale bar = 20 mm.

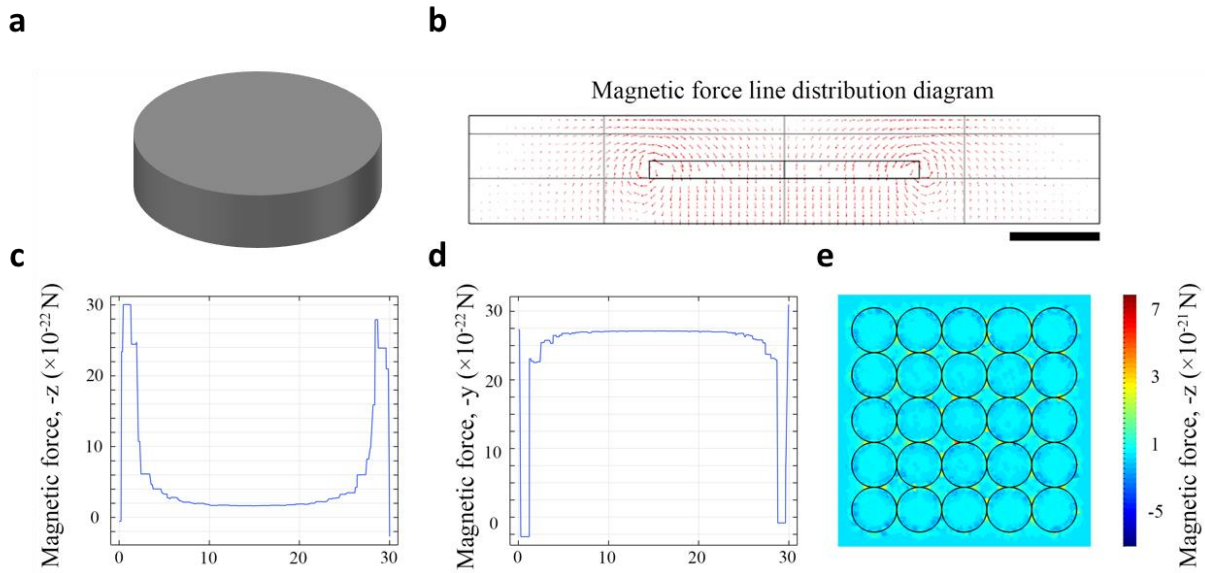


**Fig. S3** The magnetic force field *in vitro*. (a) Diagram of the magnet (H × D= 2 mm × 30 mm). (b) The force vectors within the plane are plotted. Scale bar = 20 mm. (c, d) Force carve in the z and y direction. (e) Overlaid contour lines of magnetic flux density and magnetic force vectors. Scale bar = 1 mm.

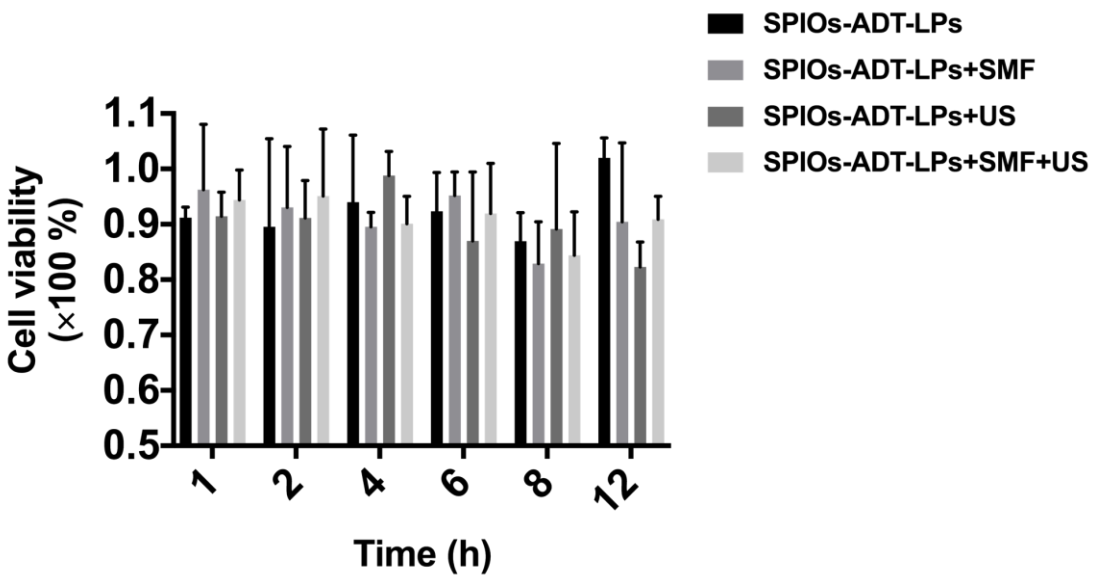


**Fig. S4** Cell viability of SPIOs-ADT-LPs incubated with L-02 cells under different incubation conditions.

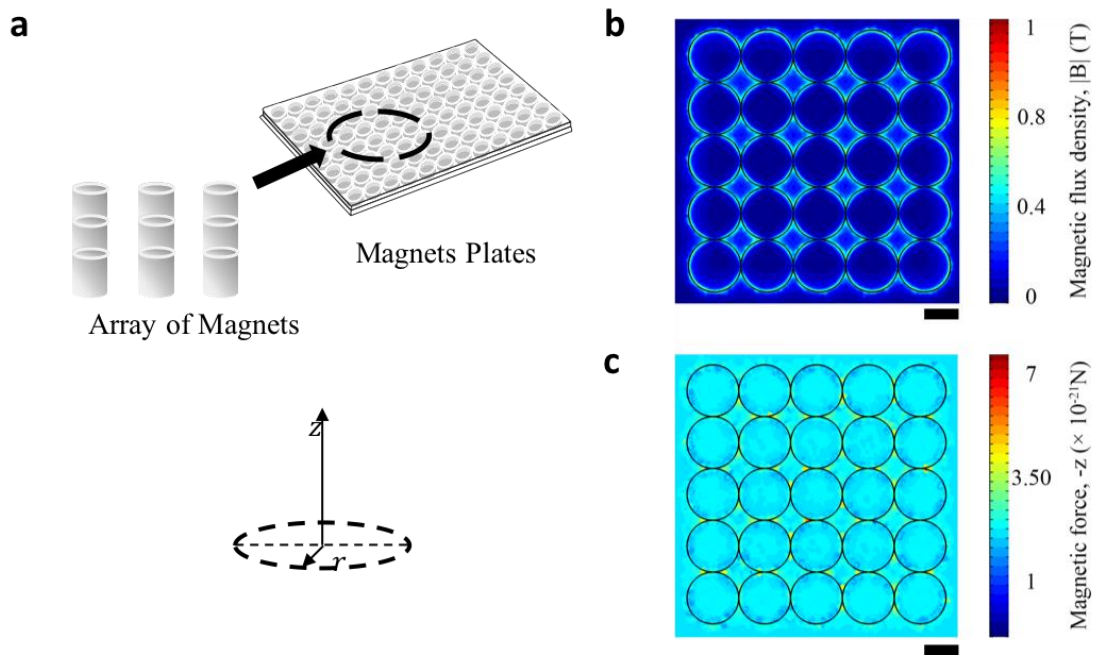


**Fig. S5** The magnetic field for *in vitro* SPIOs-ADT-LPs uptake in tumor cell culture. The cells were cultured in 96-well plates placed on a magnetic sheet that provided pulling force for the whole plates. The sheet was assembled with small cylindrical magnets (H × D = 2 mm × 10 mm). For simplicity, only a 5 × 5 matrix is shown here. (a) A schematic diagram of the matrix of the magnets. (b) The magnetic flux density. (c) The magnetic force in the z-direction. Scale bar = 20 mm.

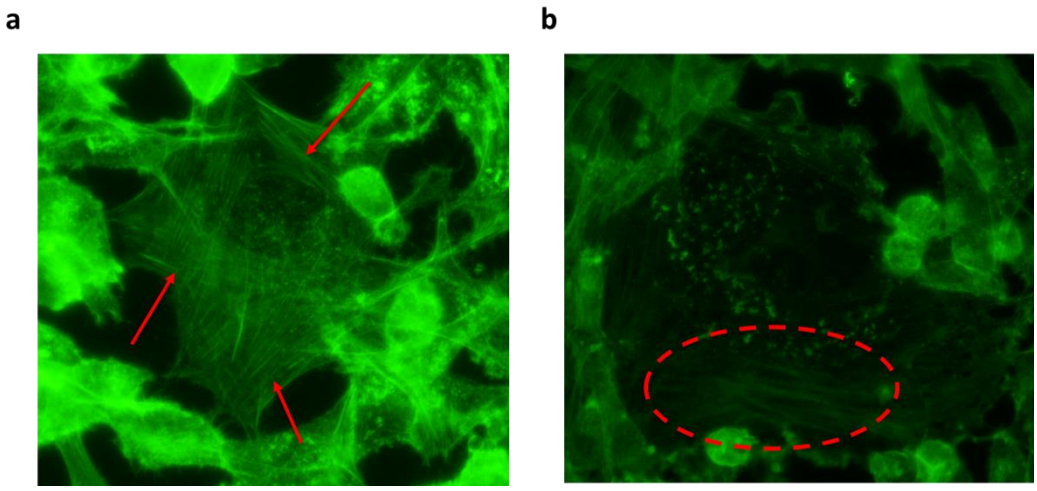


**Fig. S6** Representative fluorescence images of tumor cells with different treatment. (a) Representative fluorescence image of tumor cells in control group after 12 h culture. Arachnoid cytoskeleton which the arrow points can be observed clearly. (b) Representative fluorescence image of tumor cells incubated with SPIOs-ADT-LPs after 4 h. The fluorescence density of the cytoskeleton is significantly reduced, and the orientation of the remaining cytoskeleton begins to be consistent (dashed oval boxes).