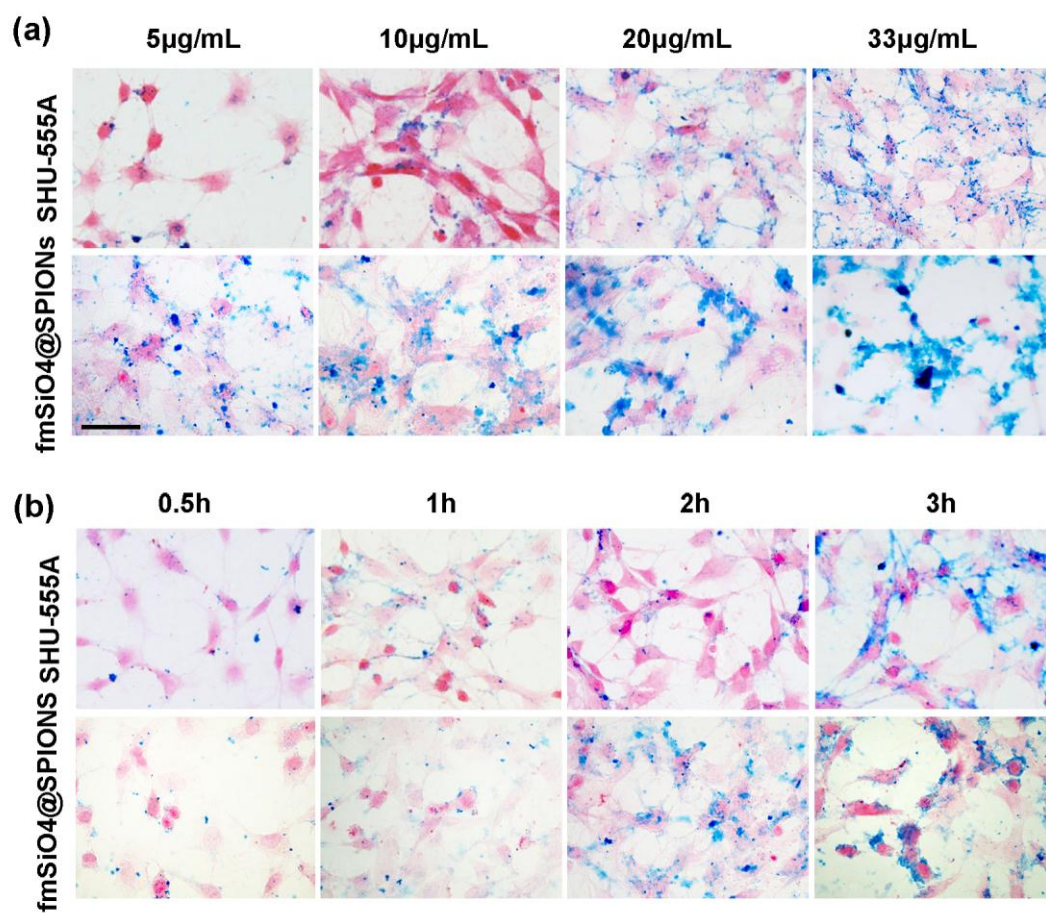
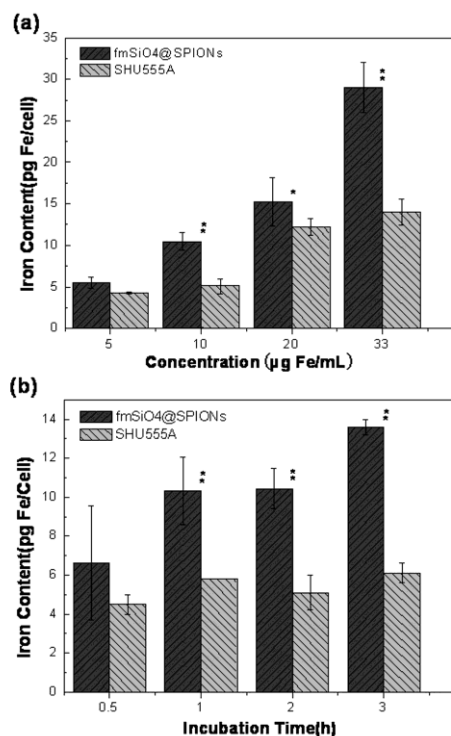


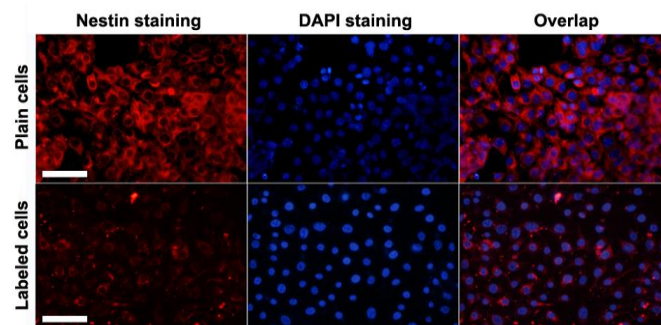
**Supporting Information:**



**Fig. S1** Prussian blue staining of C17.2 cells. a, b) Prussian blue staining of C17.2 cells after incubation with fmSiO<sub>4</sub>@SPIONs or SHU555A at different iron concentrations for 2 h (a) or at the iron concentration of 10  $\mu\text{g/mL}$  for different periods of time (b). Scale bar: 50  $\mu\text{m}$ .



**Fig. S2** ICP -OES quantification of intracellular iron. C17.2 cells were labeled with fmSiO4@SPIONs or SHU555A at different iron concentrations for 2 h (a) or at the iron concentration of 10 µg/mL for different periods of time (b). \*\*p < 0.01.



**Fig. S3** Immunofluorescence staining (against nestin) of C17.2 cells. The labeled cells were treated with fmSiO4@SPIONs at 10 µg Fe/mL for 2 h. Cell nuclei were stained with DAPI (blue). Scale bars: 50µm.

### Long term cytotoxicity of fmSiO@SPIONs

The long-term cytotoxicity of fmSiO@SPIONs was performed for cells initially labeled for 5h and 24 h at the particle concentration of 10  $\mu\text{g Fe/mL}$ . After labeling, the culture medium was removed and the cells were washed with PBS three times. Then, the cells were supplemented with fresh medium without containing fmSiO@SPIONs. At day2, day 5, day 7 and day 9, cell viability was examined with CCK-8 assay. The cell viability were  $90.28 \pm 6.14\%$  (day2),  $96.54 \pm 2.25$ (day5),  $95.01 \pm 4.69$ (day 7),  $98.95 \pm 0.14$ (day9) for cells initially labeled with the particles for 5h. For cells initially labeled for 24h, the cell viability were  $75.23 \pm 1.16\%$  (day2),  $81.29 \pm 5.32\%$  (day5),  $88.46 \pm 3.29\%$  (day7),  $94.32 \pm 3.28\%$  (day9), respectively. It was found that viability increased gradually and approached to that of normal cells. This may arise from cell division, which dilutes the intracellular nanoparticle concentration. Moreover, we also can not exclude that the internalized particles were able to be excreted by the cells. Both two reasons may explain the recovery of cell viability.