Supplementary Material (ESI) for Journal of Materials Chemistry

Electronic Supplementary Information

"A highly sensitive magnetite nanoparticle as a simple and rapid stem cell labelling agent for MRI tracking"

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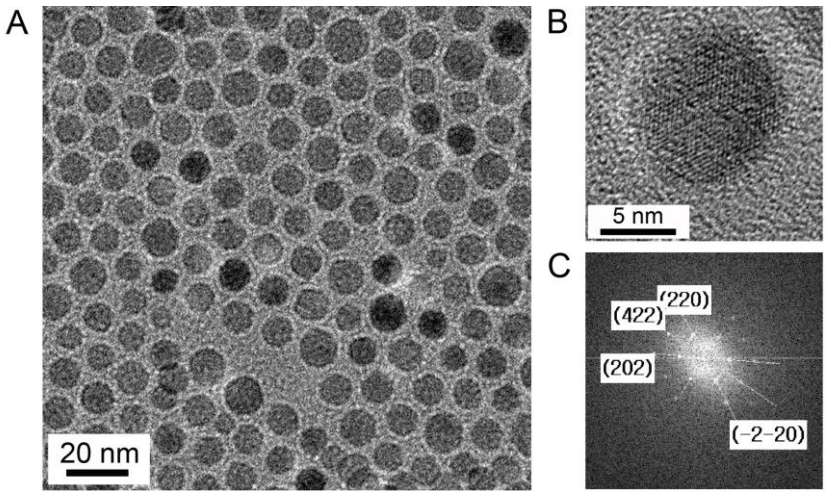

Figure S1. TEM images of oleic acid–coated SPION. (A) The average core diameter of the OA-SPIONs is 11 nm. (B) A lattice shape of OA-SPION. (C) Fast-Fourier–transformed pattern of B obtained from the HR-TEM image and indexed to the face-centered cubic Fe_3O_4 (JCPDS 85-1436).

TEM images show the highly uniform characteristics of the OA-SPIONs in terms of both particle size and particle shape. HRTEM images and electron diffraction patterns reveal the highly crystalline nature of the OA-SPIONs.

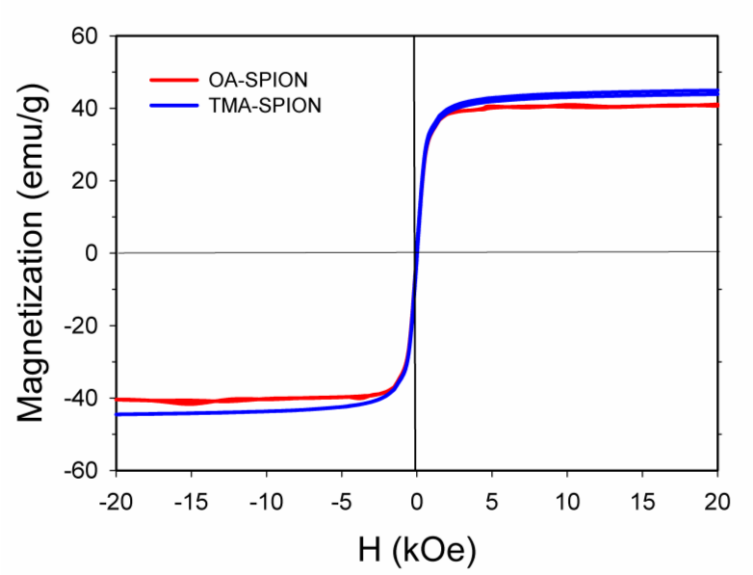

Figure S2. Room-temperature magnetization curves of OA-SPION and TMA-SPION.

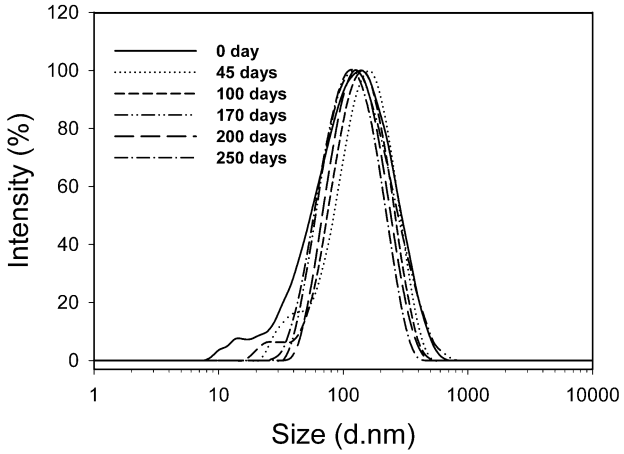

Figure S3. Stability of TMA-SPIONs in an aqueous solution.

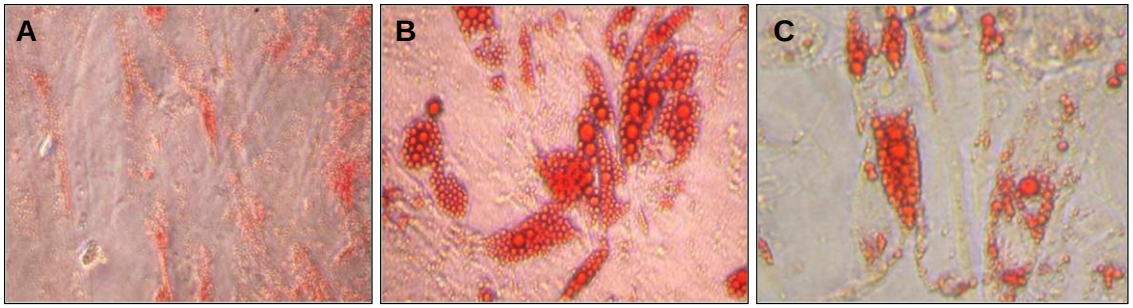

Figure S4. Differentiation potential of TMA-SPION–labelled hMSCs. (A) Undifferentiated control hMSCs. (B) Differentiated hMSCs treated with medium. (C) Differentiated hMSCs treated with TMA-SPION. The lipid droplets inside the cells are stained with Oil Red O dye.

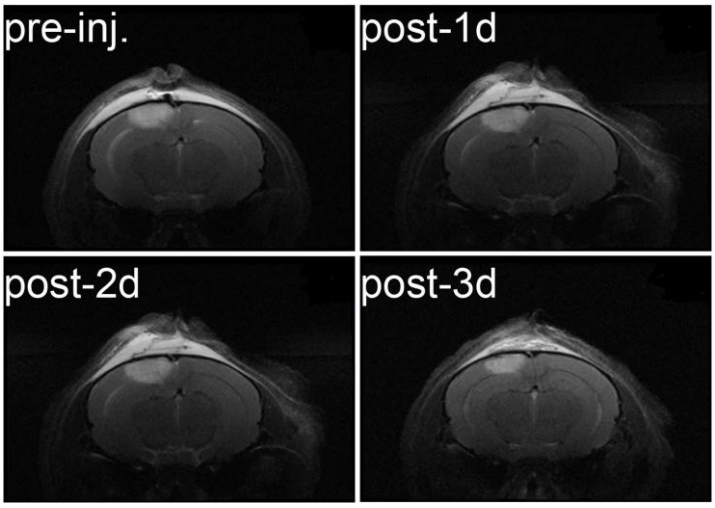

Figure S5. MR images of the control mouse brain in the photothrombotic infarct model. The control mouse was injected with 50 μL of PBS and monitored for 3 days after injection by MRI.

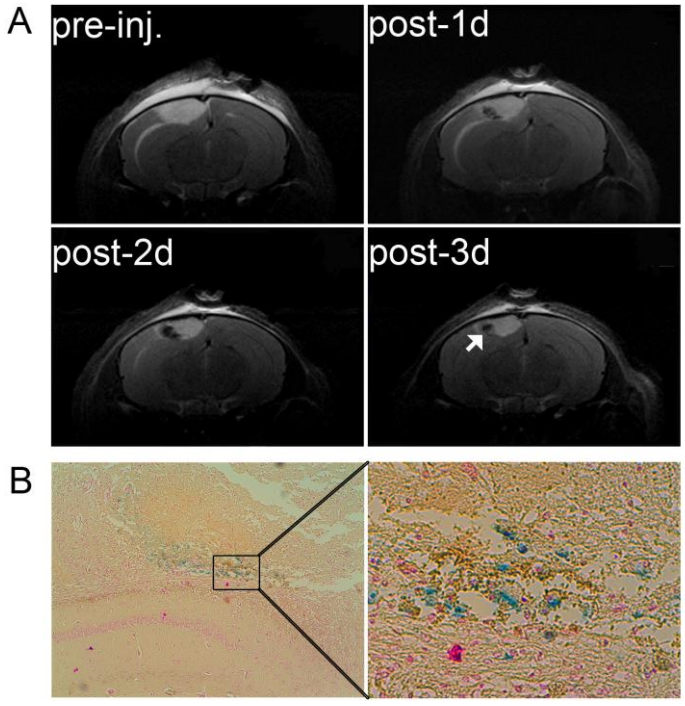

Figure S6. Tracking of labelled stem cells in the photochemically induced model of cerebral infarction. (A) Accumulation of TMA-SPION–labelled stem cells in the infarct region was observed 1 day, 2 days, and 3 days after intravenous injection. (B) Prussian blue staining image of the region of ischemia. Brains extracted from infarcted mice were sliced into paraffin sections and then stained with Prussian blue.

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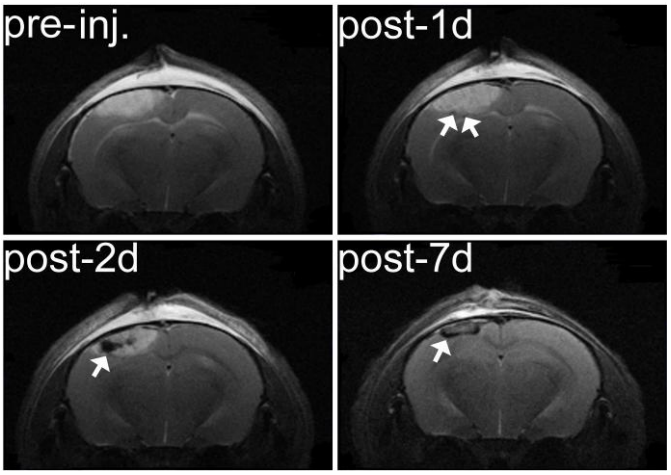

Figure S7. Tracking of labelled stem cells in the mouse infarct model after intravenous injection. The cells were observed for 7 days by MRI.