Supporting Information

Synthesis of Pt@Fe₂O₃ Nanorods As MRI Probes for in-vivo Application
Yonggang Li, a Yinjie Lu, a Haiyan Hong, a Yinyin Chen, a Xinming Ma, a Liang Guo, a Zhongling Wang, a Jianhua Chen, a Mo Zhu, a Jiankun Ni, a Hongwei Gu, b Jianmei Lu, b Jackie Y. Ying * a

General Experimental Procedures and Characterizations

In vitro MR imaging:
MR scanning was performed in all samples by using a 1.5 T system (GE Medical systems, Signa HDX). The imaging protocol consisted of T₁-weighted spin echo sequences (TR/TE = 400/10 ms), T₂-weighted fast spin echo sequences (TR/TE = 3000/90 ms) and T₂* -weighted gradient echo sequences (TR/TE = 300/5 ms, flip angle = 20º). All images were acquired with 192×192 matrix size, a 12 cm field of view (FOV), a 2.0 mm slice thickness, and a 1.0 mm slice space.

T₂ relaxation time was measured by means of a 4-echo spin-echo sequence with echo time ranging from 30 ms to 120 ms, TR/3000 ms, FOV/12 cm, thickness/2 mm, space/1 mm. T₂ was calculated by fitting the signal intensity (SI) values to the monoexponential function SI=A exp(-TE/T₂)+B. T₂ relaxativity was calculated by the equation R₂=1/T₂ ( sec⁻¹).

In vivo MR imaging:
MR images in three New Zealand rabbits were obtained on a 1.5 T system (Philips medical system, Eclipse). After the rabbits were anesthetized, imaging of the upper abdomen of the rabbits was performed before and 5 minutes, 24, and 72 hours after the administration of Pt@Fe3O4 (0.5 mg Fe/kg). The imaging protocol consisted of T₁-weighted spin echo sequences (TR/TE = 400/12 ms), T₂-weighted fast spin echo sequences (TR/TE = 3000/80 ms) and T₂* -weighted gradient echo sequences (TR/TE = 600/13.4 ms, flip angle = 20º). All images were acquired with 256×256 matrix size, a 24 cm field of view (FOV), and a 3.0 mm slice thickness.
**Synthesis of Pt Nanorods with Sodium Oleate.** 200 mg of Pt(acac)$_2$ and 150 mg of sodium oleate were added to 20 ml of oleylamine. The reaction mixture was degassed at 120°C by bubbling argon for 15 min. As the solution turned clear yellow, a drop of Fe(CO)$_5$ (~ 0.005 ml) was injected into the hot solution. The solution turned dark in color rapidly. The temperature was increased to 220°C and maintained for 30 min. The reaction was then cooled to room temperature, and the sample was centrifuged in excess isopropanol. The supernatant was discarded, and the precipitates collected were redispersed in toluene. Further separation was conducted by adding ethanol and centrifuging at high speed.

![Figure S1](image1.png)

Figure S1, TEM images of Pt nanomaterials achieved at 160°C (200mg Pt(acac)$_2$, 75mg Sodium oleate, 20ml Oleylamine, 1 drop of Fe(CO)$_5$ )

![Figure S2](image2.png)

Figure S2, TEM images of Pt nanomaterials achieved at 160°C (200mg Pt(acac)$_2$, 150mg Sodium oleate, 20ml Oleylamine, 1 drop of Fe(CO)$_5$ )
Figure S3, TEM images of Pt nanomaterials achieved at 180°C (200mg Pt(acac)_2, 150mg Sodium oleate, 20ml Oleylamine, 1 drop of Fe(CO)_5)

Figure S4, TEM images of Pt nanomaterials achieved at 220°C (200mg Pt(acac)_2, 150mg Sodium oleate, 20ml Oleylamine, 1 drop of Fe(CO)_5)

Figure S5, TEM images of Pt nanomaterials achieved at 250°C (200mg Pt(acac)_2, 150mg Sodium oleate, 20ml Oleylamine, 1 drop of Fe(CO)_5)
Figure S6, Electron Diffraction Pattern (EDP) of achieved Pt nanorods