Supporting Information

Synthesis of Pt@Fe_2O_3 Nanorods As MRI Probes for *in-vivo* Application

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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 T_1-weighted spin echo sequences (TR/TE =400/10 ms), T_2-weighted fast spin echo sequences (TR/TE =3000/90 ms) and T_2^*-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 1.0mm slice space.

T_2 relaxation time was measured by means of a 4-echo spin-echo sequence with echo time ranging from 30ms to120ms, TR/3000ms, FOV/12cm, thickness/2mm, space/1mm. T_2 was calculated by fitting the signal intensity (SI) values to the monoexponential function $SI=A^{\exp(-TE/T2)}+B$. T_2 relaxativity was calculated by the equation $R2=1/T_2$（ 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(0.5mgFe/kg). The imaging protocol consisted of T_1-weighted spin echo sequences (TR/TE =400/12 ms), T_2-weighted fast spin echo sequences (TR/TE =3000/80 ms) and T_2^*-weighted gradient echo sequences(TR/TE =600/13.4 ms, flip angle=20º). All images were acquired with 256×256 matrix size, a 24cm 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.

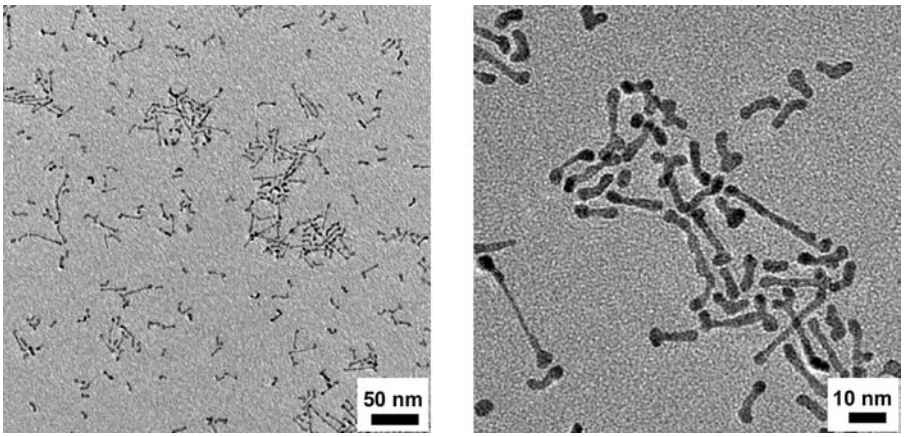

Figure S1, TEM images of Pt nanomaterials achieved at 160°C (200mg $Pt(acac)_2$, 75mg Sodium oleate, 20ml Oleylamine, 1 drop of $Fe(CO)_5$)

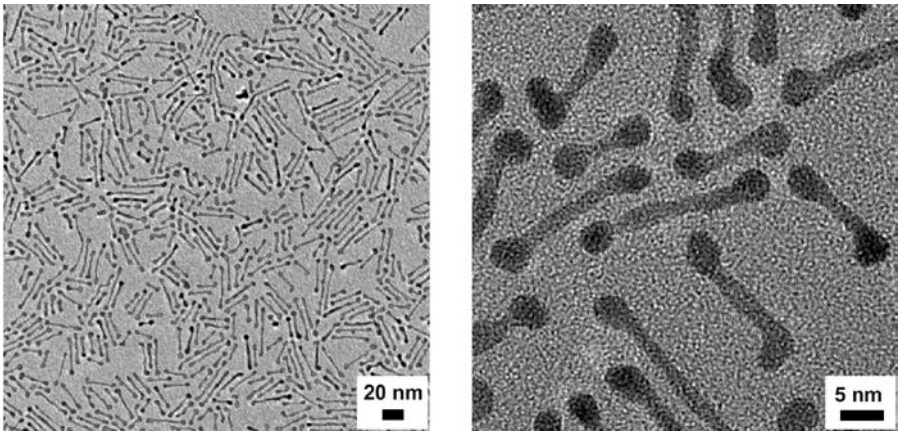

Figure S2, TEM images of Pt nanomaterials achieved at 160°C (200mg $Pt(acac)_2$, 150mg Sodium oleate, 20ml Oleylamine, 1 drop of $Fe(CO)_5$)

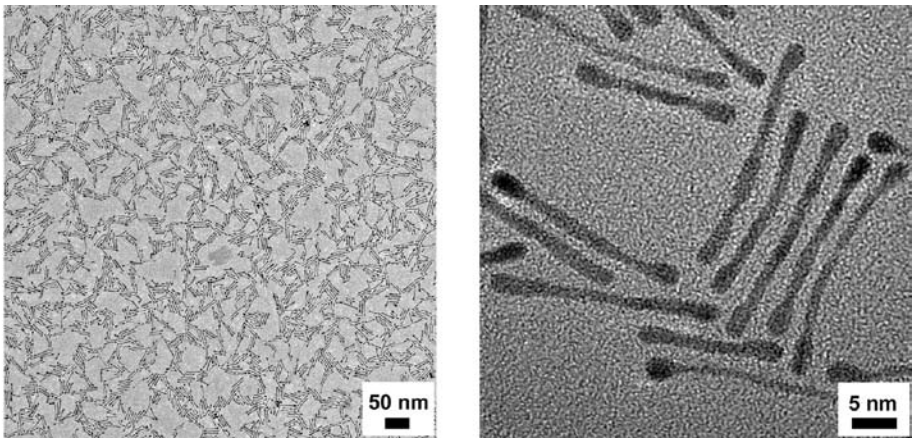

Figure S3, TEM images of Pt nanomaterials achieved at at 180^{o}C (200mg $Pt(acac)_2$, 150mg Sodium oleate, 20ml Oleylamine, 1 drop of $Fe(CO)_5$)

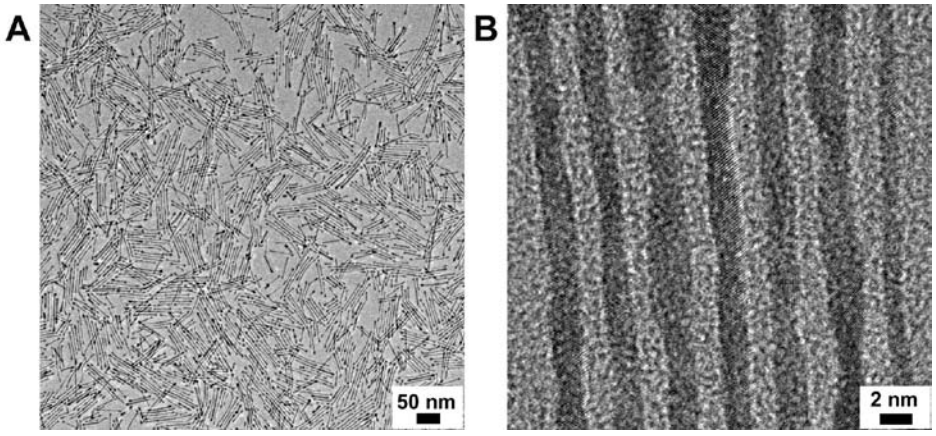

Figure S4, TEM images of Pt nanomaterials achieved at at 220^{o}C (200mg $Pt(acac)_2$, 150mg Sodium oleate, 20ml Oleylamine, 1 drop of $Fe(CO)_5$)

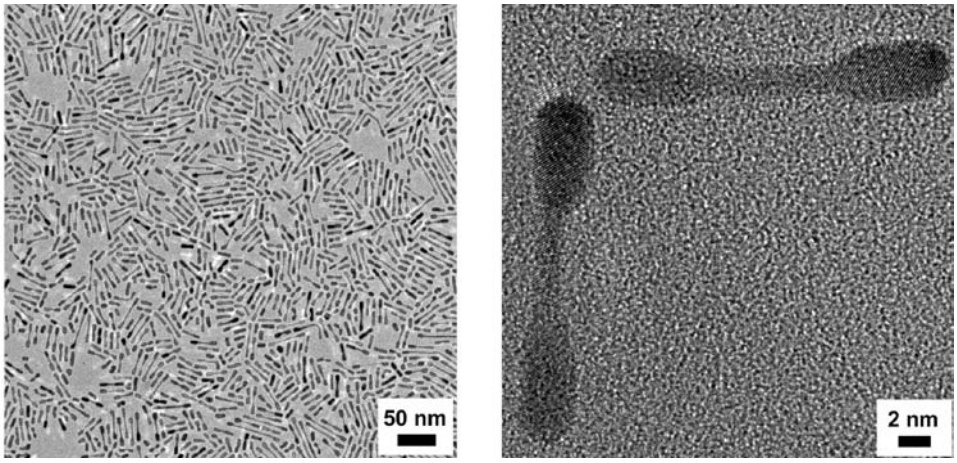

Figure S5, TEM images of Pt nanomaterials achieved at at 250^{o}C (200mg $Pt(acac)_2$, 150mg Sodium oleate, 20ml Oleylamine, 1 drop of $Fe(CO)_5$)

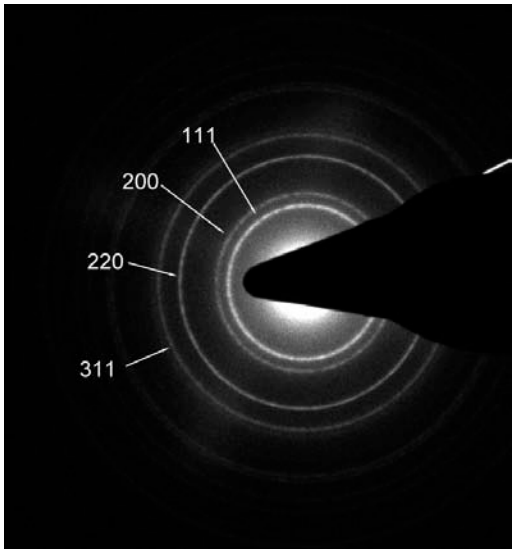

Figure S6, Electron Diffraction Pattern (EDP) of achieved Pt nanorods