

Supporting Information for

Enzyme-mimetic effects of gold@platinum nanorods on the antioxidant activity of ascorbic acid

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† Electronic Supplementary Information (ESI) available: Ascorbic acid oxidase activity of Pt NPs and the effects of Au@Pt nanorods on hydroxyl radicals generated from the Fenton reactions and TiO₂ exposed to UV radiation.

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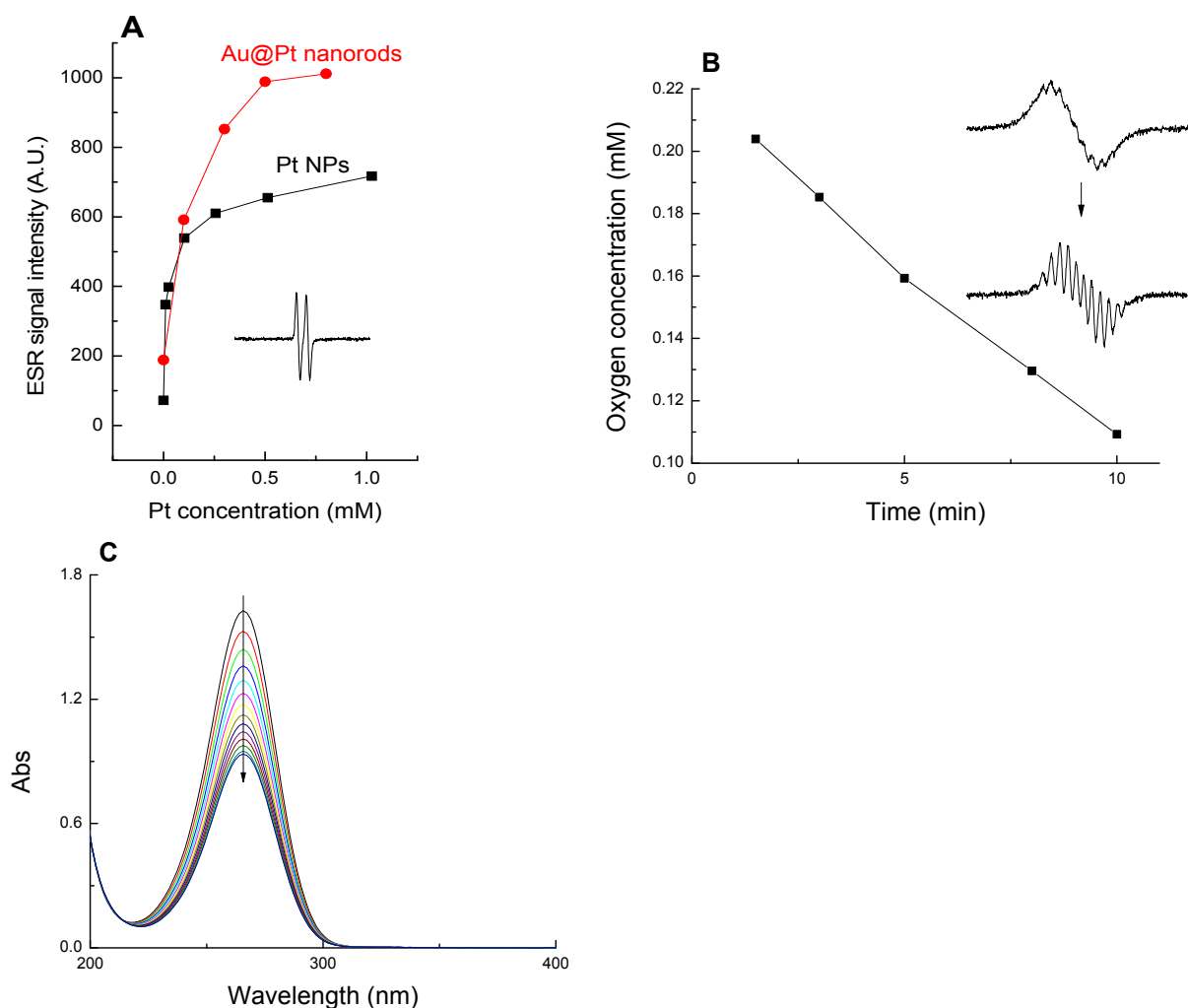


Figure S1. (A) Ascorbyl radical production is dependent on the concentration of Au@Pt nanorods and Pt NPs. Samples contained 5 mM AA and Au@Pt nanorods or Pt NPs at variable concentrations in 50 mM PBS (pH 7.4). The inset shows the ESR spectrum of the ascorbyl radical. The ESR signal intensity was measured as the peak-to-peak value of the first line of the spectrum. (B) Oxygen consumption during the oxidation of ascorbic acid catalyzed by Pt NPs. Samples contained 5 mM AA, 0.14mM CTPO, 0.05 mM Pt NPs, and 50 mM PBS buffer (pH 7.4). The Inset shows the ESR spectrum change of CTPO. (C) UV-Vis spectra evolution of 0.1 mM AA in presence of 5 μ M Pt NPs in 50 mM PBS buffer (pH 7.4) during 30 min. Arrow shows decrease in absorbance. The concentration of nanoparticles refers to atomic concentration.

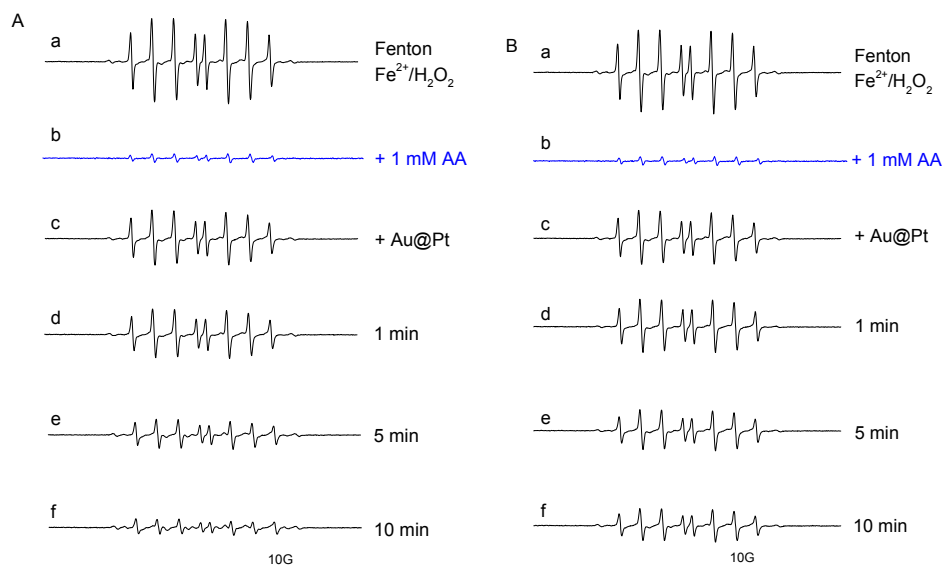


Figure S2. Effect of Au@Pt nanorods on hydroxyl radicals generated through the Fenton reaction. Reaction mixtures contained 10 mM PBS buffer (pH 7.4), 10mM DEPMPO, 1 mM H_2O_2 , 0.2 mM Au@Pt nanorods or 1 mM AA, and 0.5 mM Fe^{2+} (this order was followed in preparing the control (a), AA added to the control sample (b), and Au@Pt added to the control sample (c-f)). For time premixing, the Au@Pt nanorods were first mixed with A (d-f) H_2O_2 or B (d-f) Fe^{2+} for 1, 5, and 10 min and then Fe^{2+} (panel A) or H_2O_2 (panel B) was added before adding the spin trap. ESR conditions: power 20 mW, field modulation 1G, scan width 100 G. Pt nanodots concentration was used for Au@Pt nanorods.

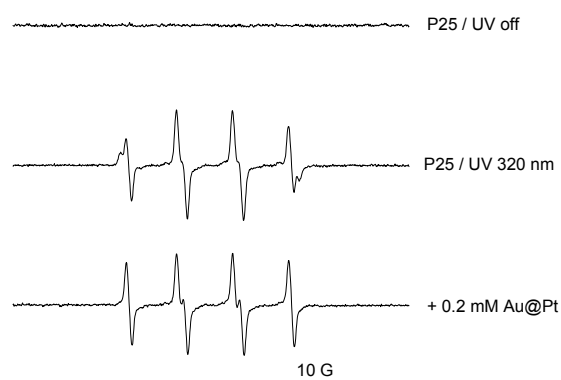


Figure S3. Effect of Au@Pt nanorods on hydroxyl radicals obtained from P25 (TiO_2) exposed to UV irradiation (320 nm). Samples included 50 mM DMPO, 10 mM PBS buffer (pH 7.4), 0.1 mg/ml TiO_2 , in absence or presence of 0.2 mM Au@Pt nanorods. Spectra were recorded after exposure to UV radiation for 3.5 min. Pt nanodots concentration was used for Au@Pt nanorods.