Supplementary Data

pH Dependent Catalytic Activities of Platinum Nanoparticles with Respect to the Decomposition of Hydrogen Peroxide and Scavenging of Superoxide and Singlet Oxygen

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Fig. S1 ESR spectra of BMPO/•OH adducts obtained from samples containing 10 mM HCl-KCl buffer (pH 1.12), 3.85 nM Pt NPs, and 50 mM BMPO in absence of 1 mM H_2O_2 (black) and in presence of 1 mM H_2O_2 (red).



Fig. S2 UV-Vis spectra of Pt NPs in 5 mM H_2O_2 and 10 mM buffer with different pH values for 0 min (black curve) and 30 min (red curve): (a) 1.12; (b) 7.27; (c) 10.96. TEM images of Pt NPs before (d) and after reaction 30 min in 5 mM H_2O_2 and 10 mM buffer at pH 1.12 (e), 7.27 (f) and 10.96 (g). The good repeatability of spectra and their intact morphologies at 0 min and 30 min indicates that Pt NPs in buffer with different pH values are stable without any aggregation or dissolution.



Fig. S3 ESR spectra of BMPO/•OH adducts obtained from samples containing 10 mM buffer, 1 mM H_2O_2 , and 50 mM BMPO in absence of Pt NPs (a) and in presence of 3.85 nM Pt NPs (b) under different pHs.



Fig. S4 (a) Schematic illustration of line width in ESR spectra of ¹⁵N-PDT increase with the increase of O_2 concentration in solutions. (b) The linear relationship between line width of ESR spectra and O_2 concentration in solutions. In the O_2 saturated solution, the O_2 concentration is 258 μ M. While in the air saturated solution, the O_2 concentration is 54.18 μ M.



Fig. S5 (a) O_2 generation activity of catalase. The samples contain 0.05 mM ¹⁵N-PDT, 1 unit/ml catalase, 10 mM PBS buffer (pH 7.27), and 5 mM H₂O₂ at different time interval. (b) Time dependence of O_2 concentration in samples contain 0.05 mM ¹⁵N-PDT, 10 mM buffer, and 5 mM H₂O₂ under different pH values.



Fig. S6 ESR spectra of BMPO/•OOH adducts obtained from samples contain 25 mM BMPO, 20% DMSO, 2.5 mM KO₂, 0.35 mM 18-Crown-6 at different pH values.

