

Extinction Effect of Gold Nanocatalysts on a Photocatalytic Activities under Plasmonic Excitation

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SUPPLEMENTARY MATERIALS

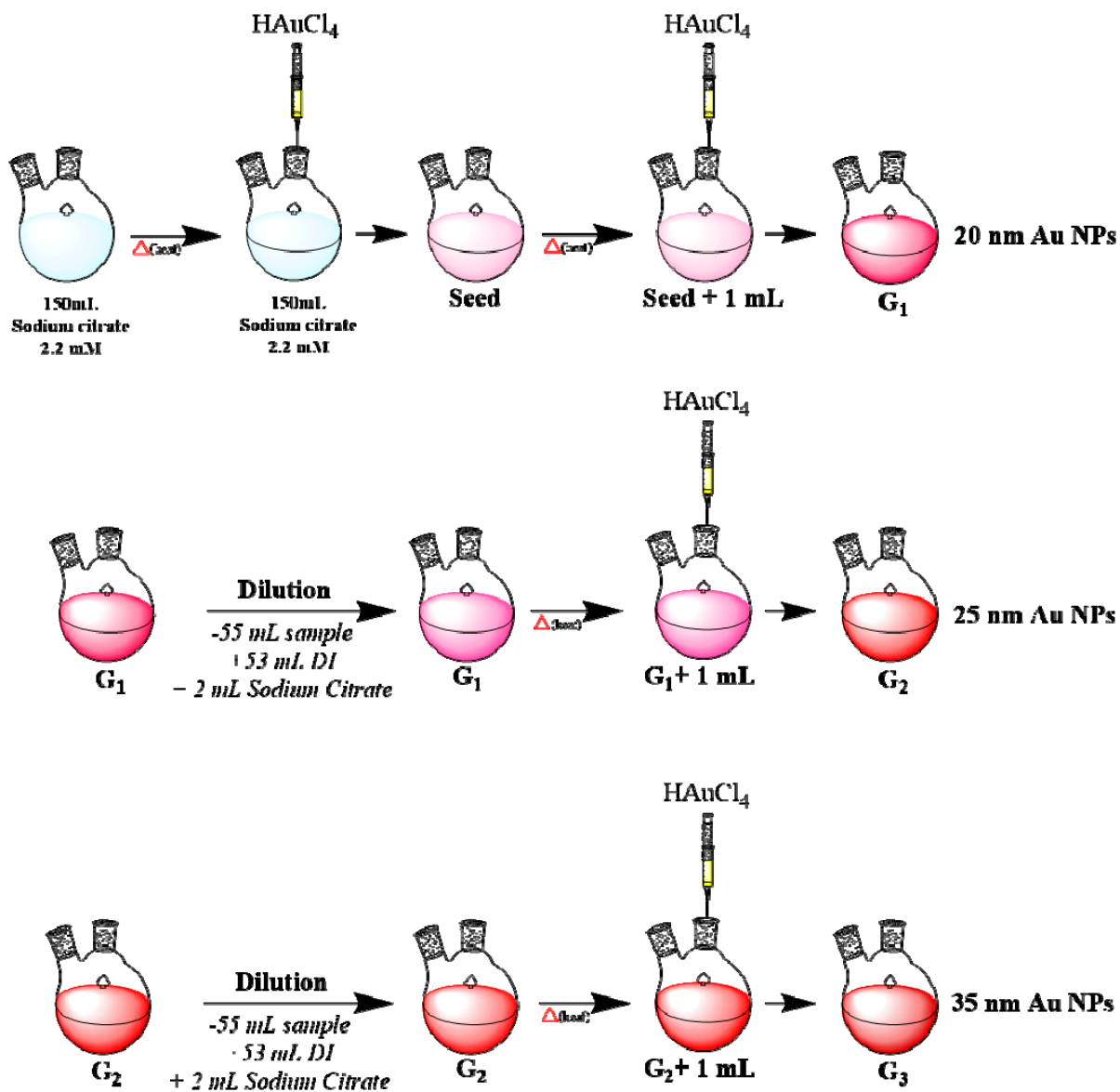


Figure S1. Schematic illustration of the seeded-growth method employed for our experiments. The synthetic protocol is composed of two times series of dilution and injection steps after preparation of 20 nm of Au nanoparticles. The terms G₁, G₂, and G₃ denoted 20 nm, 25 nm, and 35 nm of Au nanoparticles, respectively.

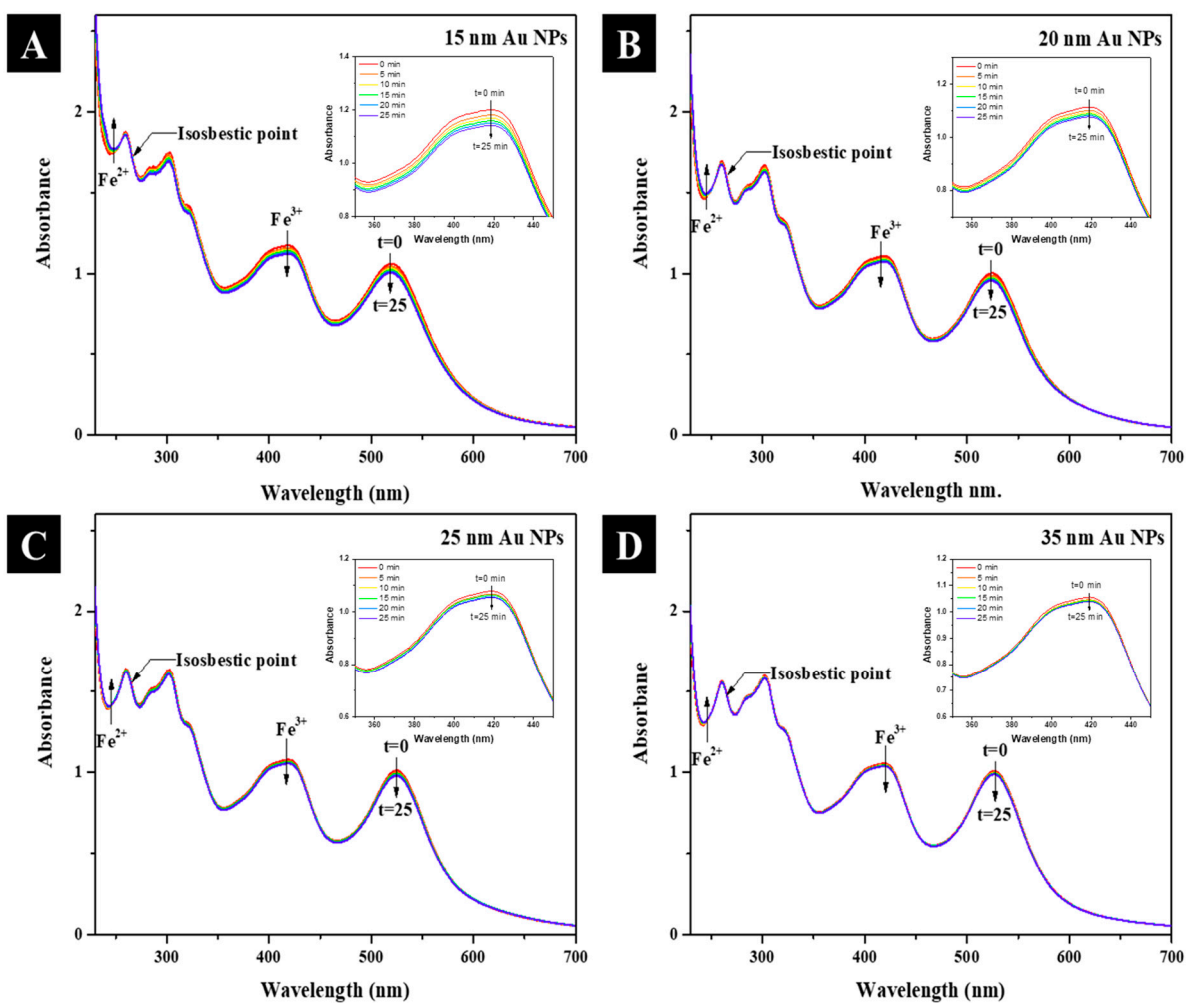


Figure S2. Spectroscopic monitoring of photocatalytic reduction of Fe^{3+} for the size of (a) 15 nm, (b) 20 nm, (c) 25 nm, and (d) 35 nm of the Au nanoparticles. The spectral change was taken after 5 min light irradiation under 532 nm excitation wavelength with a power of 700 mW. 0.5 mL of ethanol was added to the reaction mixture as a hole scavenger. Insets are enlarged spectrum for a range of wavelength corresponding to Fe^{3+} .

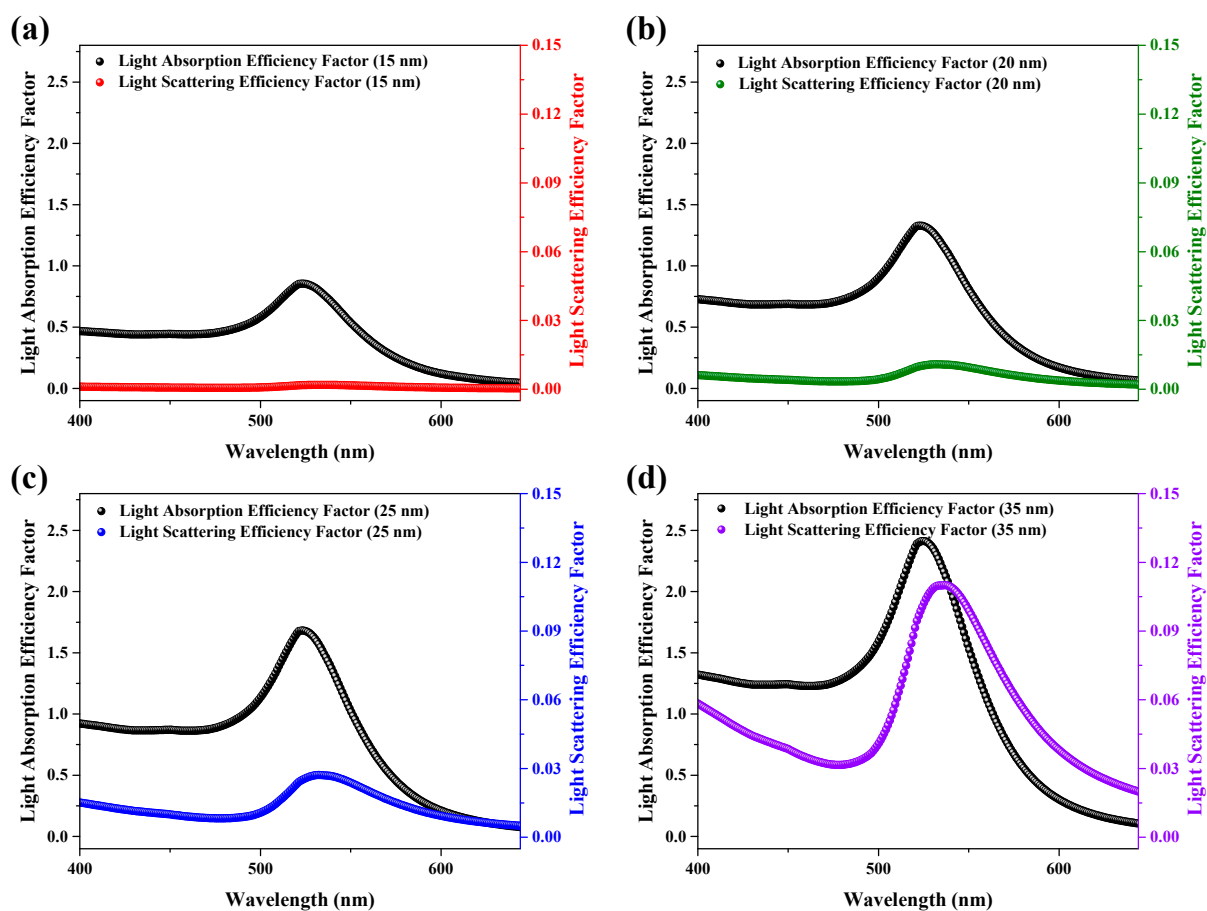


Figure S3. Simulated absorption and scattering spectra of (a) 15 nm, (b) 20 nm, (c) 25 nm, and (d) 35 nm of Au nanoparticles. This spectrum was obtained from NANODDSCAT+, which is an open-source simulation tool that available on nanoHUB.org.

Table S1. Tabulated summary of power-dependent reaction rate obtained from the experiments shown in Figure 4 (a). The values in the table are obtained average values from at least three times independent trials.

Laser Power (mW)	Reaction Rate ($M \cdot s^{-1}$)			
	15 nm	20 nm	25 nm	35 nm
0	7.88×10^{-9}	3.63×10^{-9}	3.12×10^{-9}	2.14×10^{-9}
100	9.29×10^{-9}	4.71×10^{-9}	3.17×10^{-9}	3.00×10^{-9}
300	1.26×10^{-8}	6.96×10^{-9}	5.16×10^{-9}	2.86×10^{-9}
500	1.45×10^{-8}	8.22×10^{-9}	5.52×10^{-9}	4.09×10^{-9}
700	1.92×10^{-8}	1.15×10^{-8}	6.00×10^{-9}	4.92×10^{-9}