

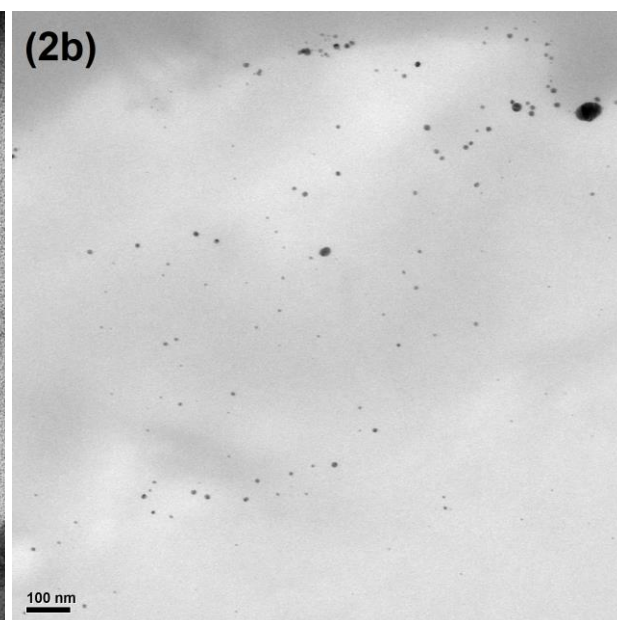
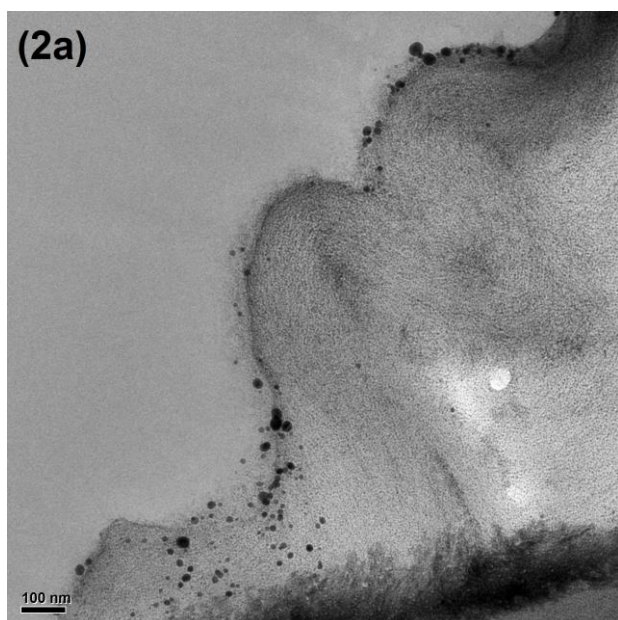
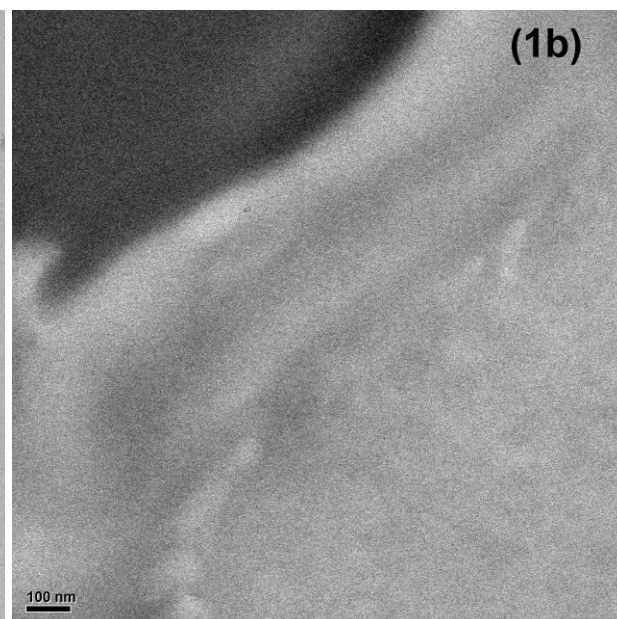
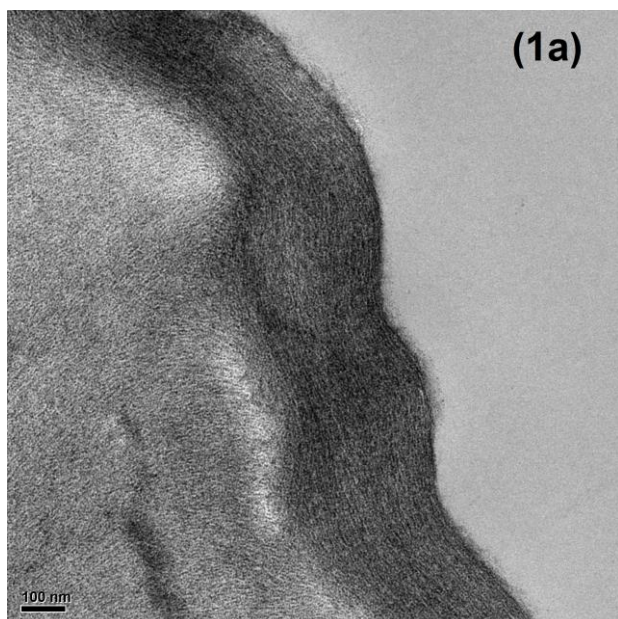
# **In Situ and Facile Synthesis of Silver Nanoparticles on Baby Wipe and Their Applications in Catalysis and SERS**

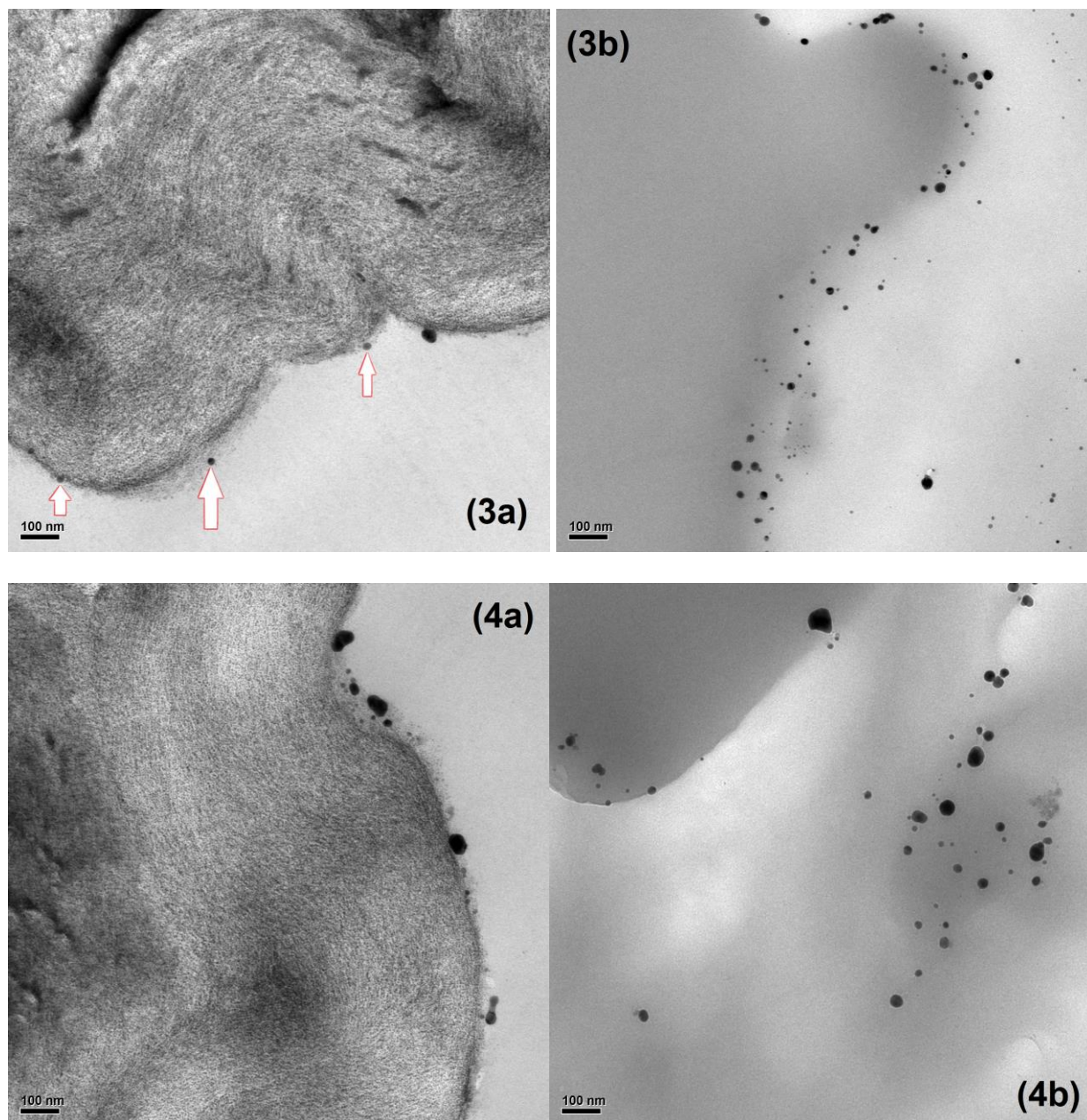
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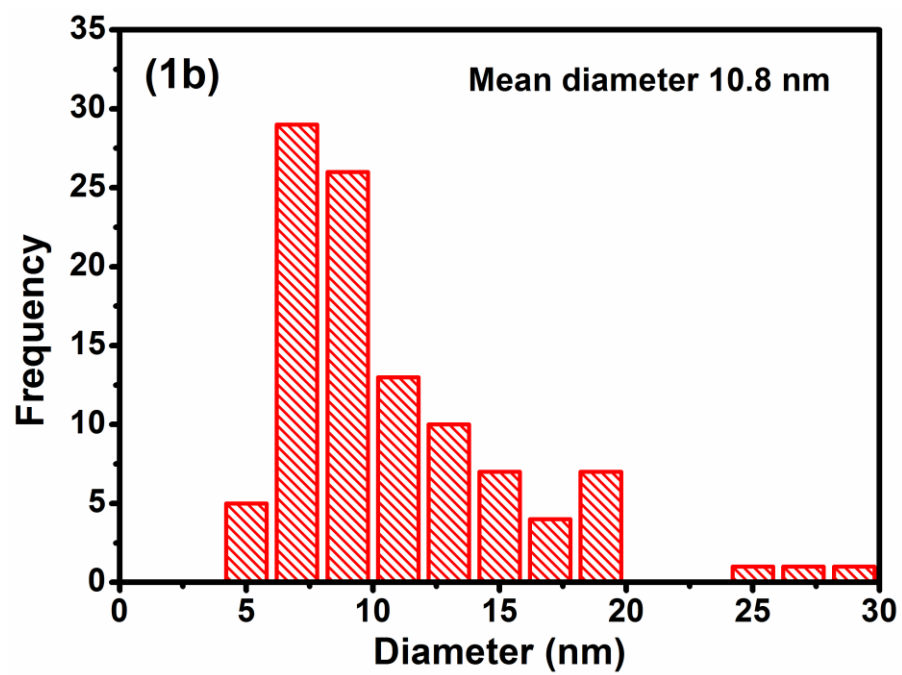
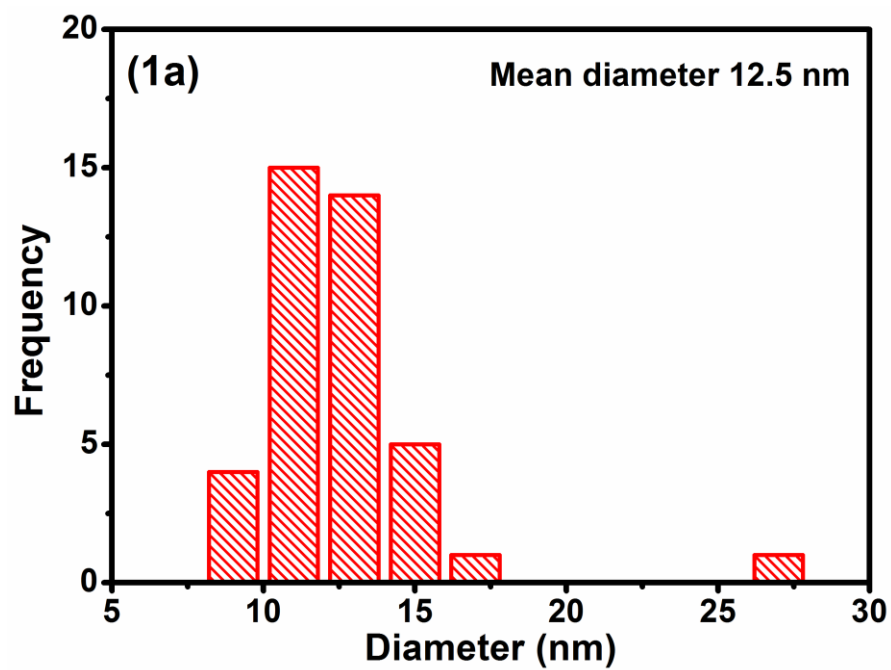
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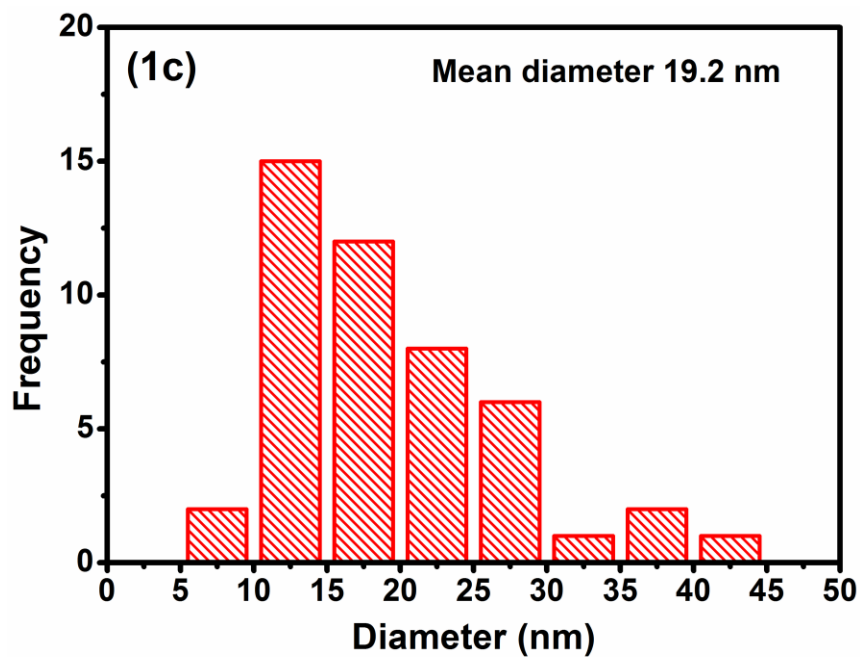
E-mail address: [bbaruah@kennesaw.edu](mailto:bbaruah@kennesaw.edu)



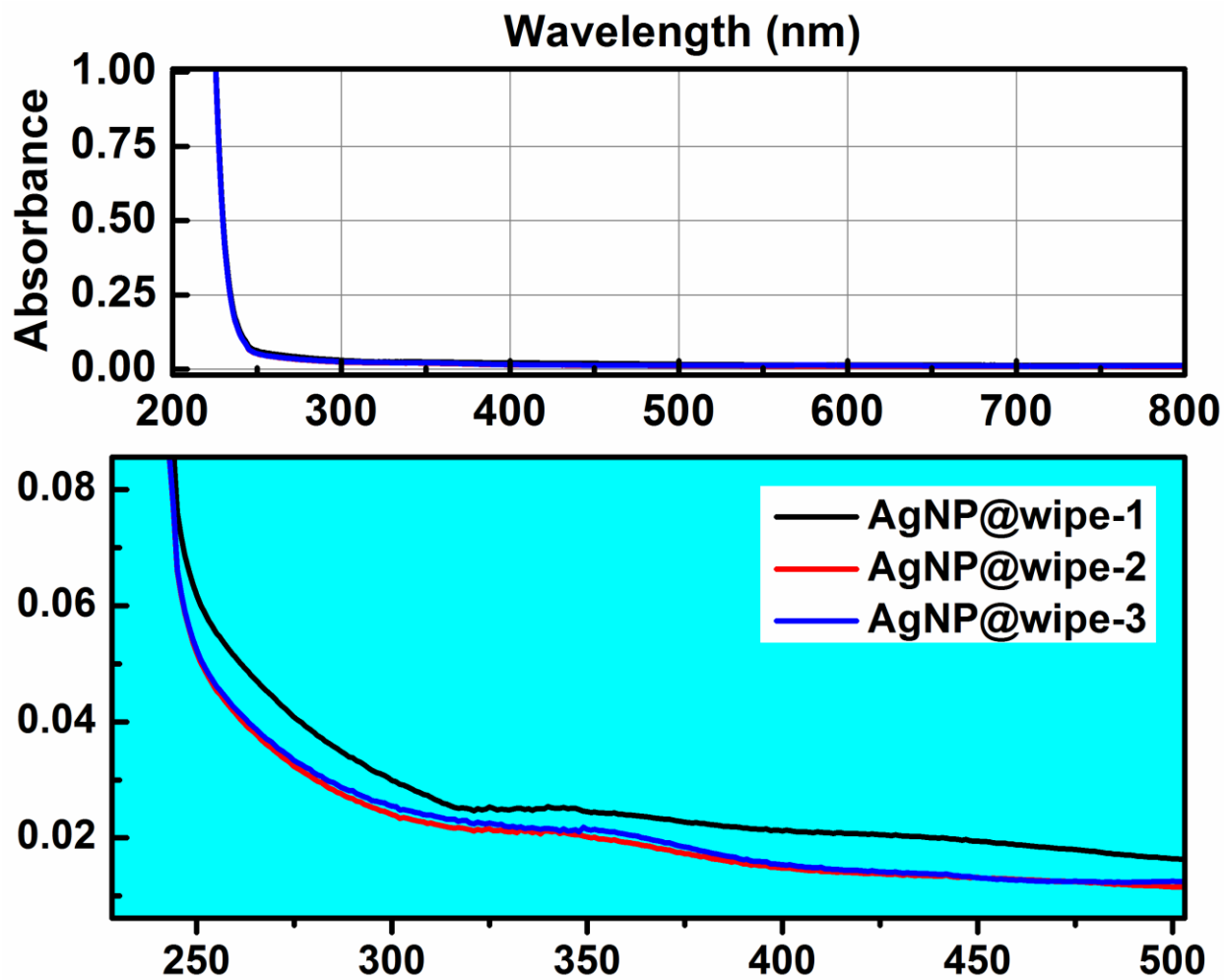


**Figure S1.** TEM images of empty wipe (1a, 1b), AgNP@wipe-1 (2a, 2b), AgNP@wipe-2 (3a, 3b) and AgNP@wipe-3 (4a, 4b). Samples 1a-4a were stained with 5% aqueous uranyl acetate first and then 2% lead citrate. Samples were washed with DI water after stain with each dye. Samples 1b-4b were unstained. Scale bar is 100 nm.

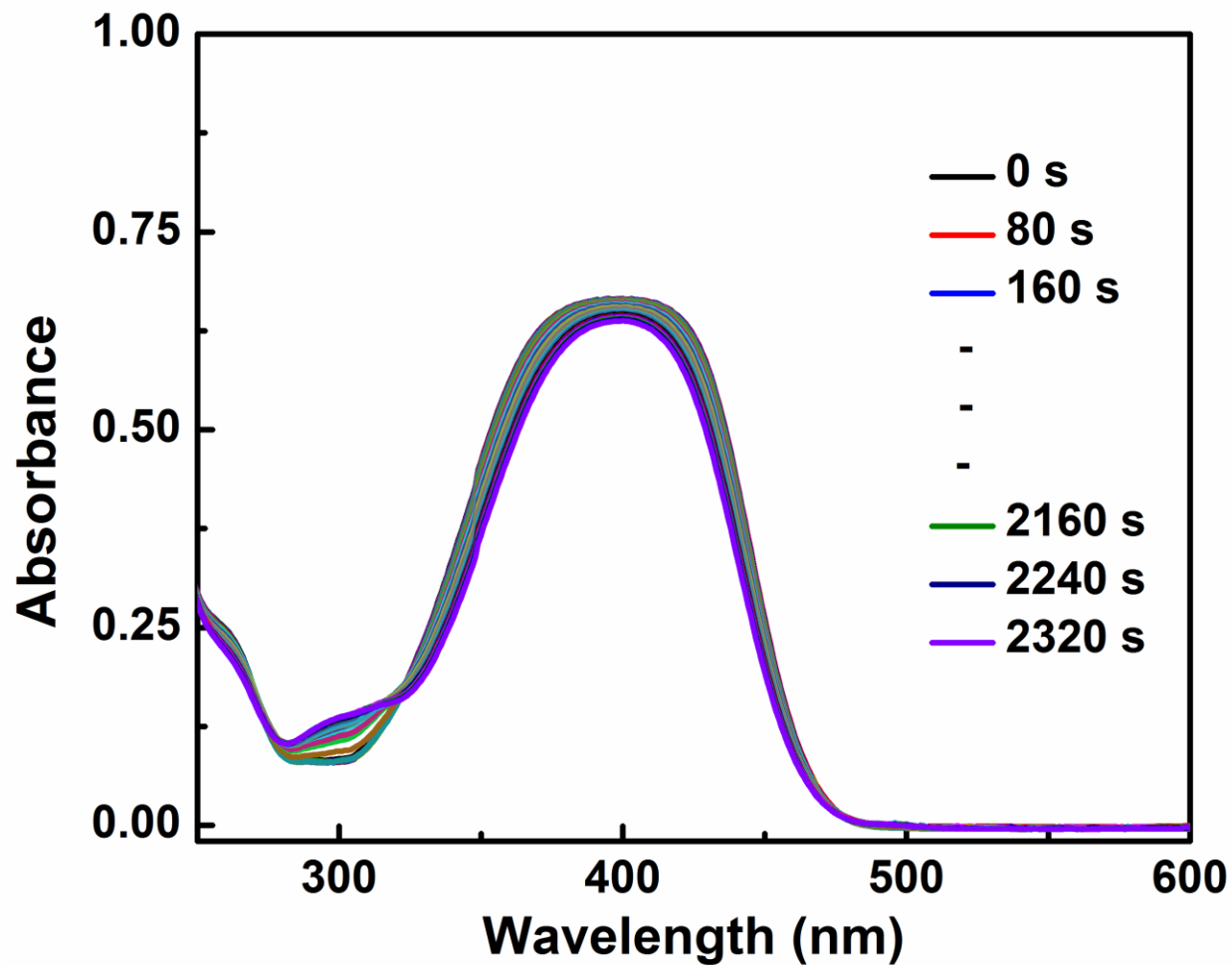




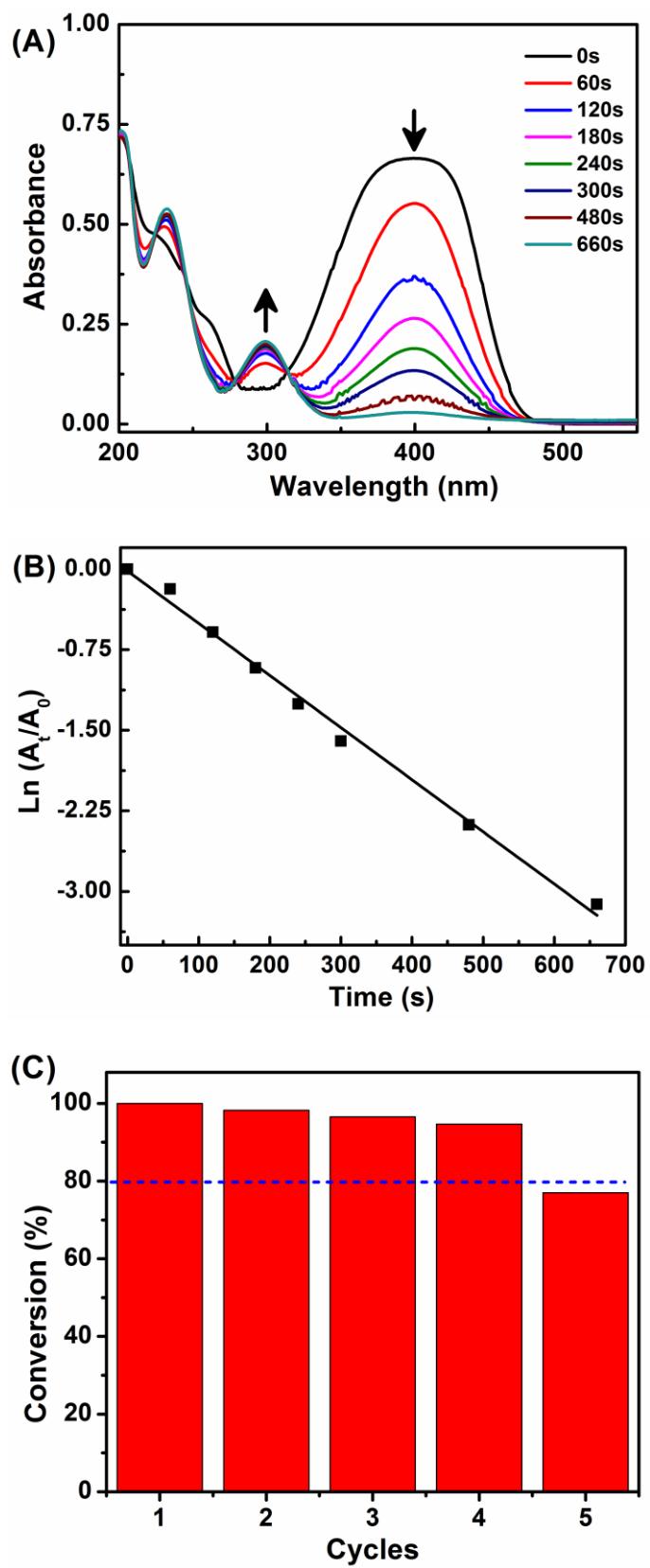
**Figure S2.** The size distribution histogram of the AgNPs calculated from TEM images of AgNP@wipe-1 (1a), AgNP@wipe-2 (1b) and AgNP@wipe-3 (1c).



**Figure S3.** UV-visible spectra of run on water after sonicating wipes for 1.5 hrs and no absorbance for AgNP was observed.

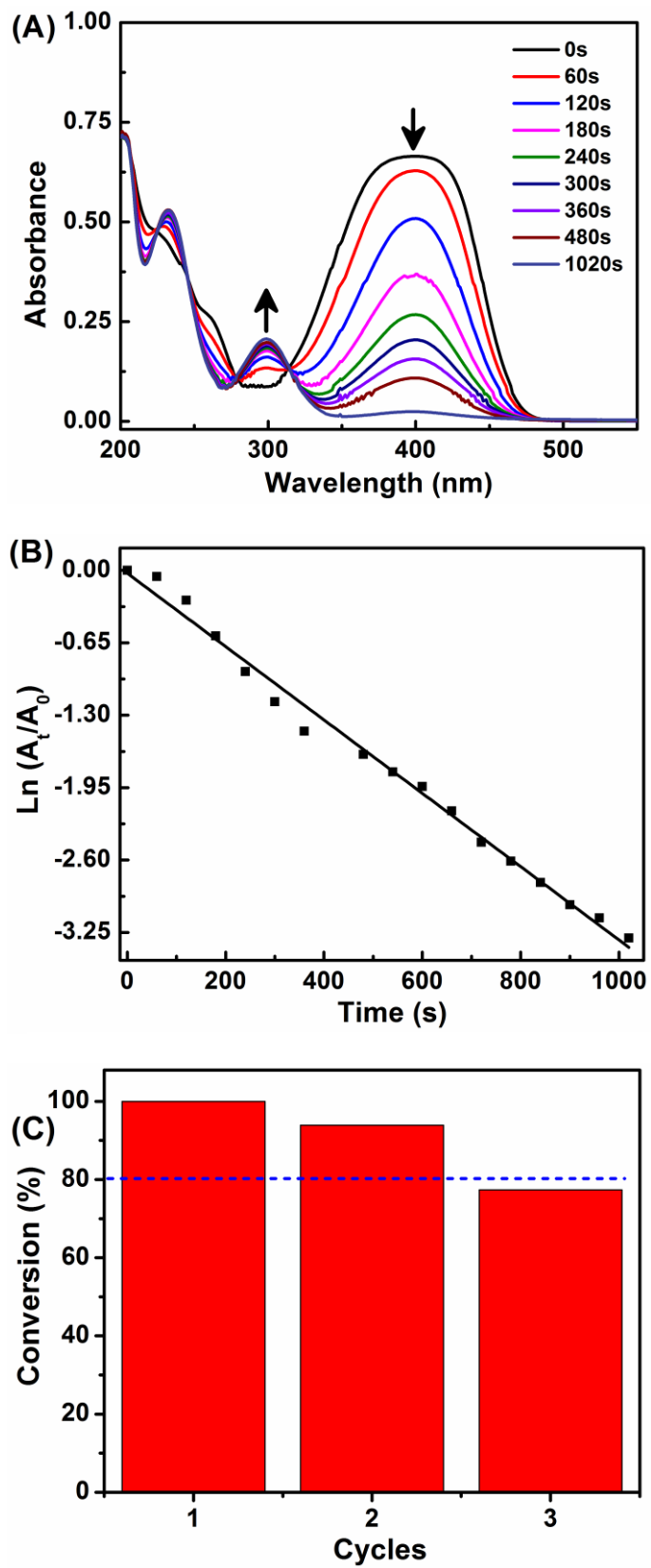


**Figure S4.** UV-visible spectra of 0.12 mM 4-nitrophenol in presence of 12 mM NaBH<sub>4</sub> without any catalyst. There is no visible conversion 4-nitrophenol to 4-aminophenol even after 35 minutes of reaction time.

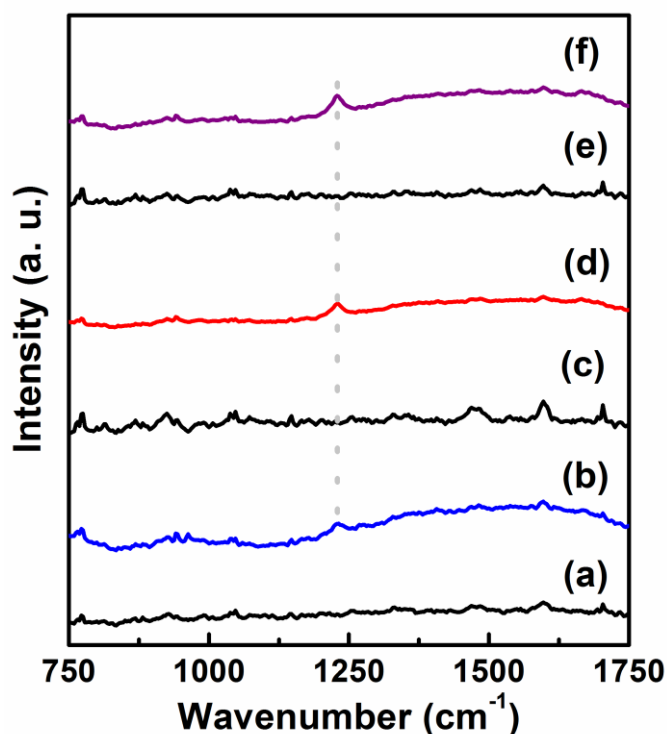




**Figure S5.** (A) Plot of UV-visible absorbance of 0.12 mM 4-nitrophenol against wavelength. The absorption peak at 400 nm gradually decreases due to catalytic activity of AgNP@wipe-2 in presence 12 mM NaBH<sub>4</sub>. (B) The pseudo-first-order kinetics of 4-nitrophenol with excess NaBH<sub>4</sub> in aqueous solutions is plotted as  $\ln(A_t/A_0)$  vs time (s). (C) Percent conversion of 4-nitrophenol in five successive cycles.



**Figure S6.** (A) Plot of UV-visible absorbance of 0.12 mM 4-nitrophenol against wavelength. The absorption peak at 400 nm gradually decreases due to catalytic activity of AgNP@wipe-1 in presence 12 mM NaBH<sub>4</sub>. (B) The pseudo-first-order kinetics of 4-nitrophenol with excess NaBH<sub>4</sub> in aqueous solutions is plotted as  $\ln(A_t/A_0)$  vs time (s). (C) Percent conversion of 4-nitrophenol in three successive cycles.



**Figure S7.** (A) Raman spectra of AgNP@wipe-1 (a), AgNP@wipe-2 (c), and AgNP@wipe-3 (d) before catalytic reaction. SERS spectra of 4-aminophenol adsorbed on AgNP@wipe-1 (b), AgNP@wipe-2 (d) and AgNP@wipe-3 (f) after catalytic reaction completing 3 cycles, 5 cycles and 8 cycles, respectively. The characteristic signal for 4-aminophenol appears at 1228 cm<sup>-1</sup>.