Supplementary Information

Tunable synthesis of water soluble ultrathin AuAg nanowires and their catalytic applications

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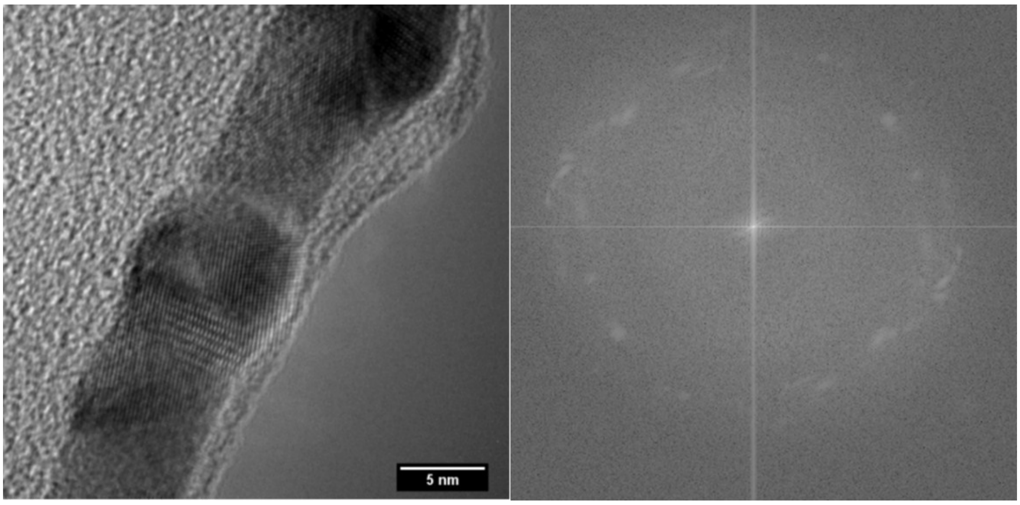

S1: HR-TEM (left) and FFT (right) of ultrathin AuAg NWs produced following dilution after 1 day of aging.

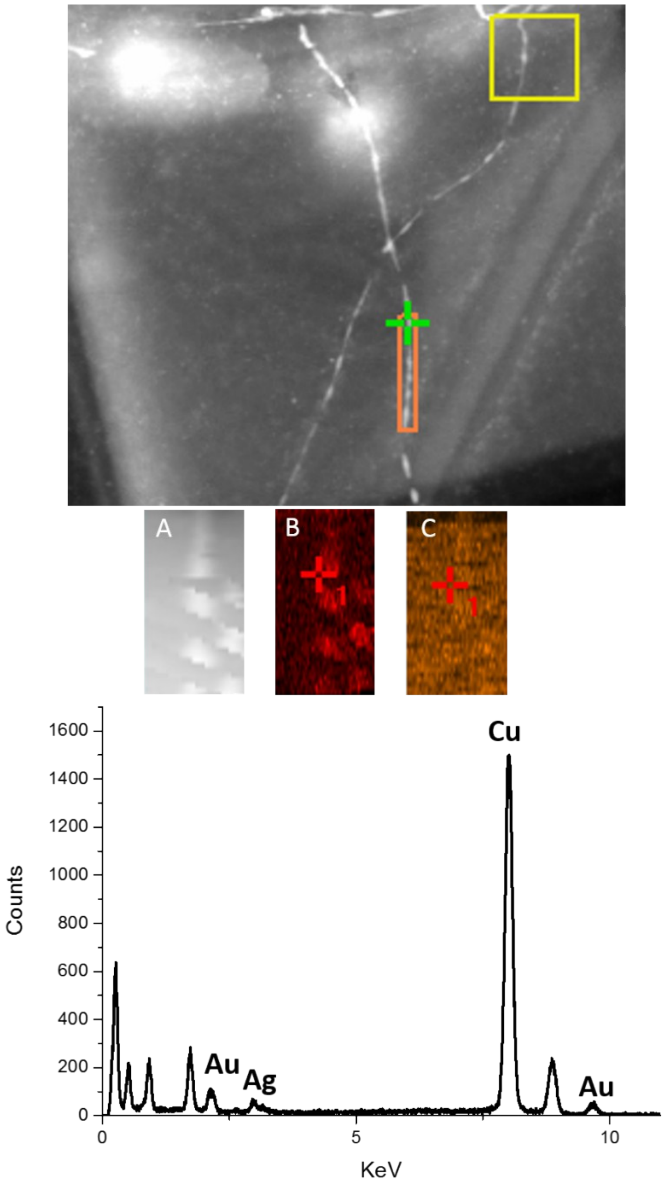

Figure S2: HAADF STEM (A) and EDX map of pre-diluted AuAg NWs were and B and C denotes the L-line of Ag and M- line of Au respectively. The associated EDX spectrum (bottom) is also detailed.

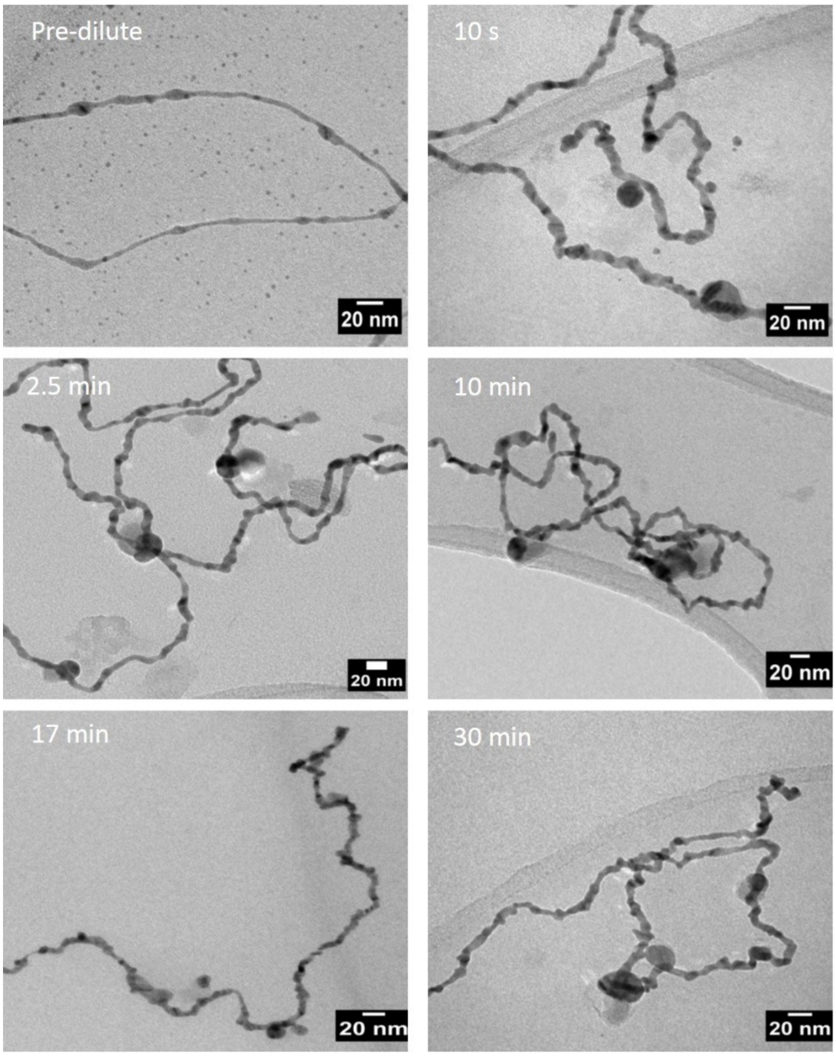

Figure S3: TEM analysis monitoring the growth of AuAg nanowires following dilution with water after 18 hrs of aging.

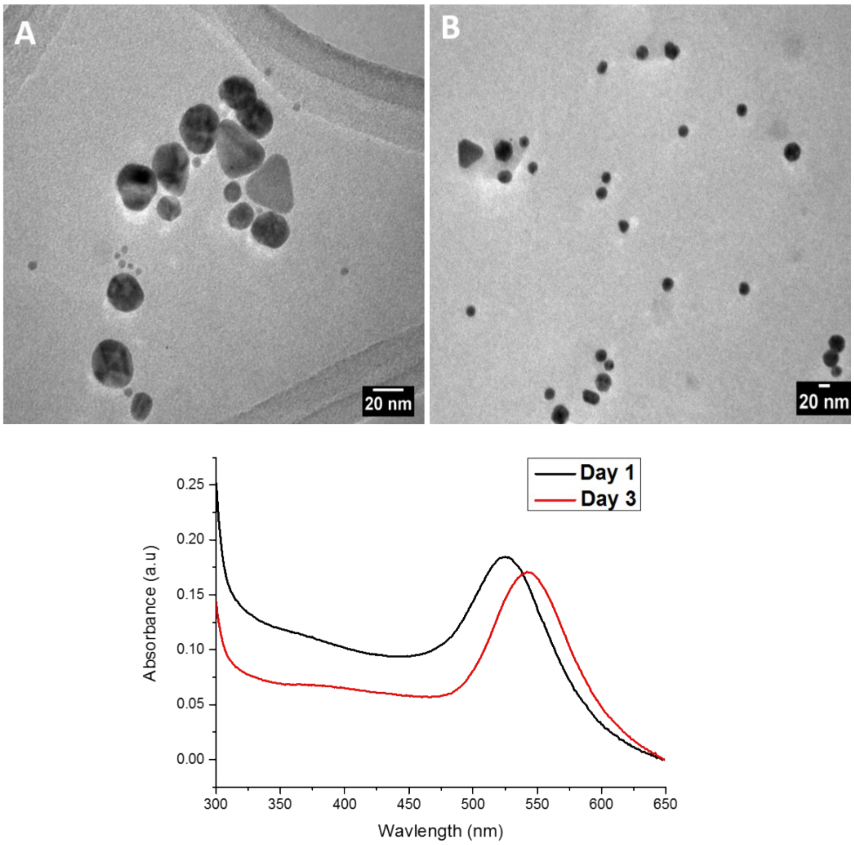

Figure S4: TEM image of Au nanoparticles after 1 (A) and 3 (B) days aging following dilution and UV-Vis spectra of products produced following dilution after each day.

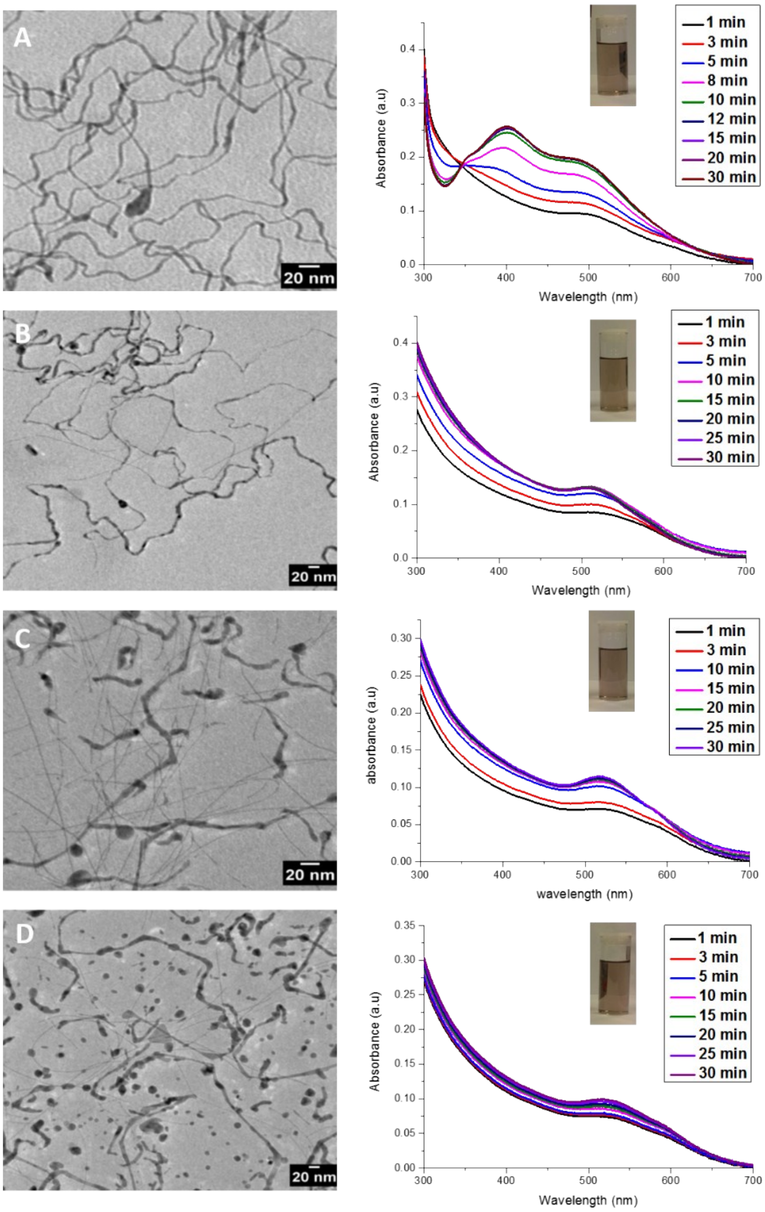

Figure S5: TEM images (left) and UV-Vis (right) analysis of nanowires produced following dilution with water (A), methanol (B), ethanol (C) and isopropanol (D) after 2 days of aging. Photograph inset of final solution.

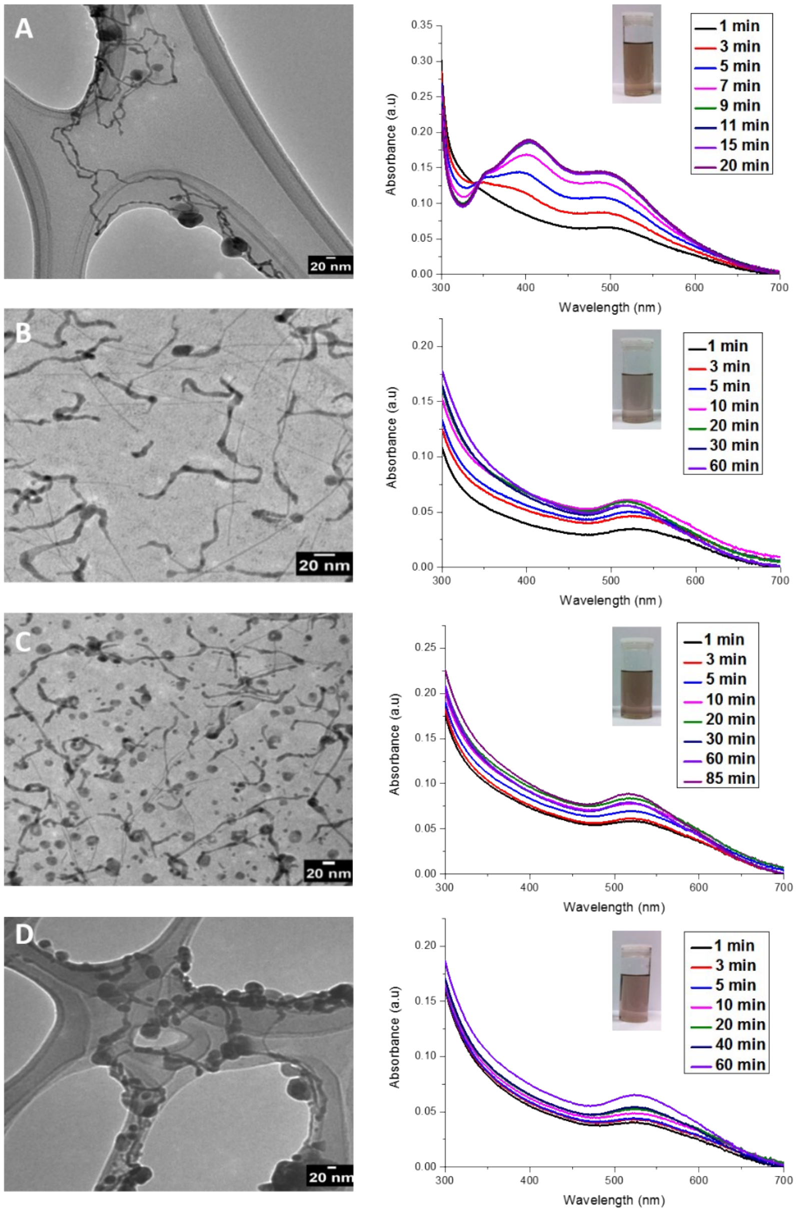

Figure S6: TEM images (left) and UV-Vis (right) analysis of nanowires produced following dilution with water (A), methanol (B), ethanol (C) and isopropanol (D) after 3 days of aging. Photograph inset of final solution.

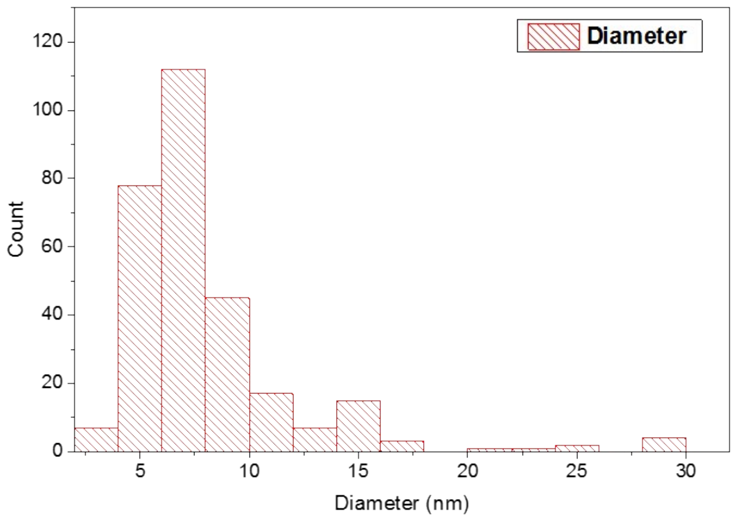

Figure S7: Size distribution of ultrathin AuAg NWs produced using a dilution factor of 5 after 1 day of aging with average diameter of 8 nm.

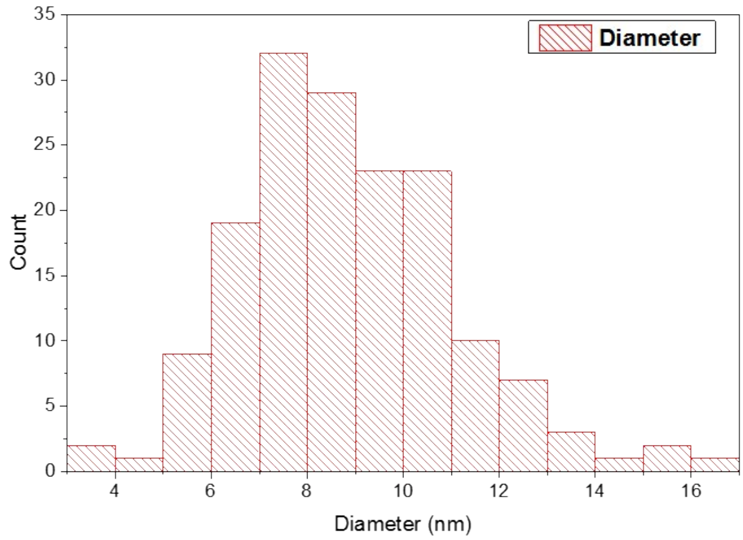

Figure S8: Size distribution of ultrathin AuAg NWs produced using a dilution factor of 10 after 1 day of aging with average diameter of 8.8 nm.

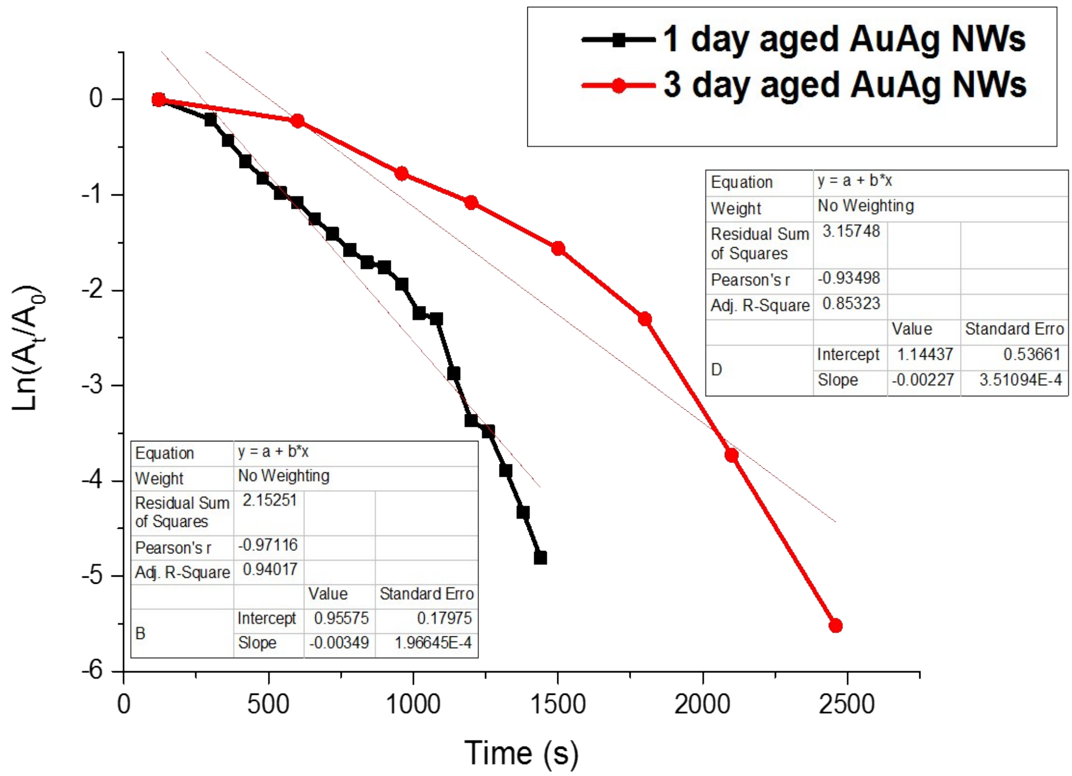

Figure S9: kinetic curves for the rate of reduction 4-nitrophenol using ultrathin AuAg nanowires produced after 1 day and 3 days at 400 nm detailing linear fitting.

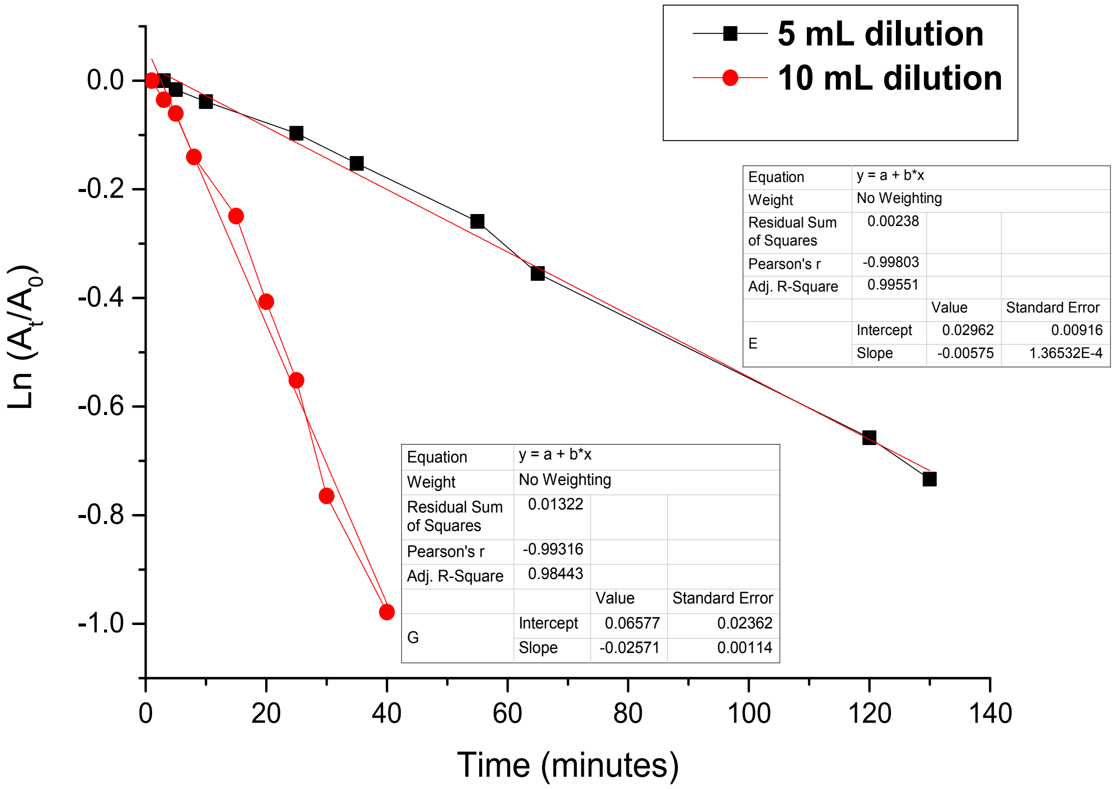

Figure S10: Kinetic curves for rate of formation of AuAg nanowires following dilution with 5 and 10 mL at 324 nm detailing linear fitting.

Table S1: Catalytic reduction of 4-Nitrophenol by various noble metal nanomaterials

Catalyst	Rate constant (10^{-3} s^{-1})	Catalyst loading
Ag NW @ Au NP[1] 0.1% Au/Ag	0.87	0.5 mg mL^{-1}
1% Au/Ag	1.4	0.5 mg mL^{-1}
5% Au/Ag	3.4	0.5 mg mL^{-1}
Ag NWs[1] (30 nm)	0.47	0.45 mg mL^{-1}
Au NWs (2 nm) on alumina beads[2]	8.8	2.28 µ g
$Pt_{93}Bi_7$ NWs[3] (4.1 nm)	0.46	15 µg
Pt_{92} Bi_8 NWs[3] (4.7 nm)	2.3	15 µg
$Pt_{55}Pd_{38}$ Bi_7 NWs[3] (4.4 nm)	4.3	15 µg
Au@Ag NP[4] (10 nm core)	0.09	-
Au NP (6 nm)@GO[5]	2	-
Ag NP (7.5 nm)@GO[6]	3.4	$1.8x10^{-4}$ M
Au NP@Tween 80[7] (14 nm)	1.5	1 mmol/L
Ag NP@SiO_2 nanorattles[8]	3.3	4 mg
Au@Ag NP on MOF[9]	4.97	3.46 mg
AuAg (8 nm) (this work)	3.4	0.45 mg mL^{-1}
AuAg (3nm) (this work)	2.2	0.45 mg mL^{-1}

GO = graphene oxide NP = nanoparticle NW = nanowire MOF = metal organic framework

References

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