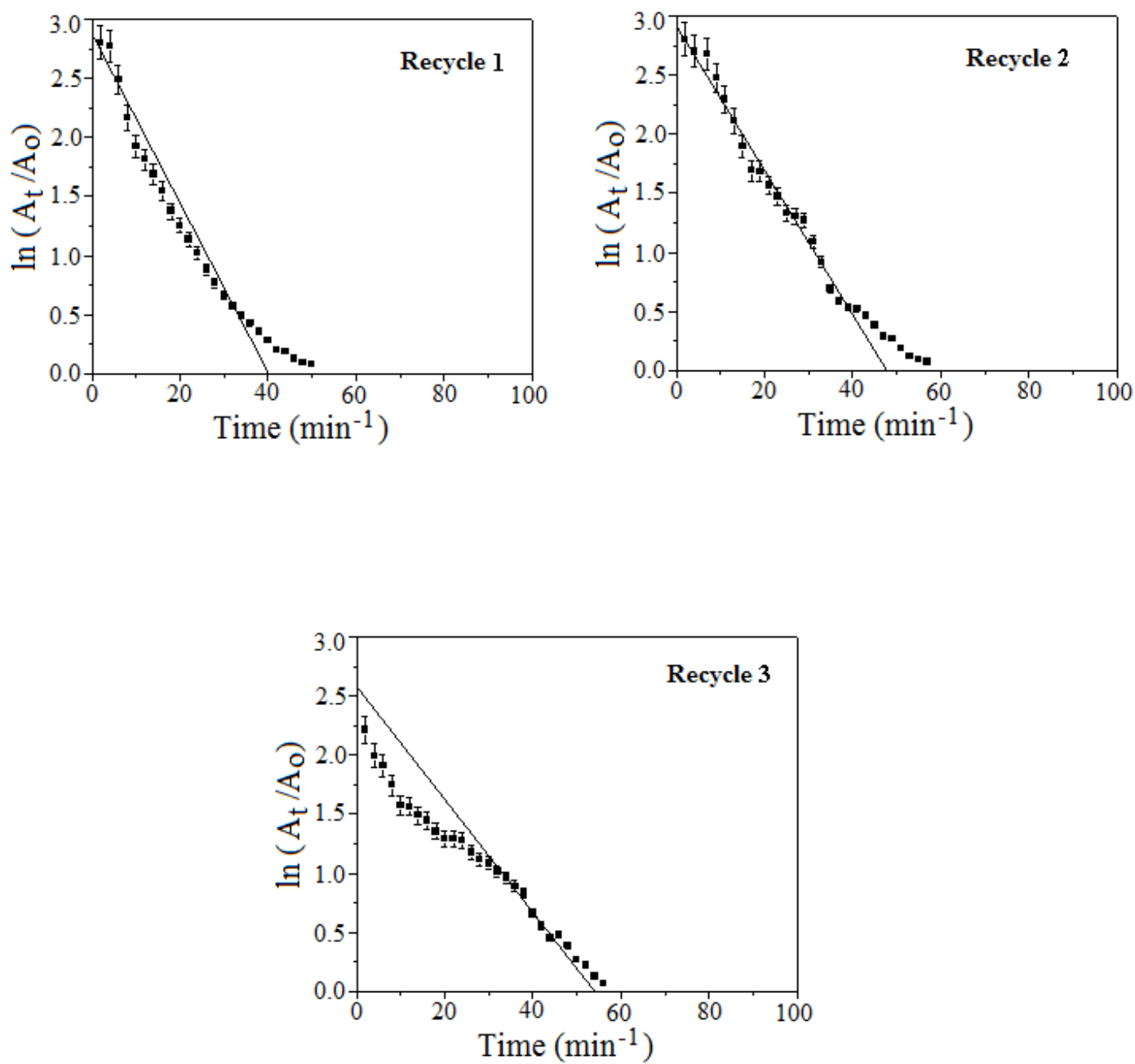


S 1 Time dependent UV spectra for the catalytic reduction of *p*-nitrophenol using NaBH_4 in presence of PHMAg. (Different recycles)



S 2. Plots of $\ln(A_t/A_0)$ versus time for the catalytic reduction of *p*-nitrophenol using NaBH_4 in presence of PHMAg. (Different recycles)

S 1 shows the time dependent UV spectra for the catalytic reduction of 4-Np using NaBH₄ in the presence of PHMAG after recycle 1,2 and 3. Subsequently, the corresponding data has been used to plot of $\ln(A_t/A_0)$ as a function of time (S2) and calculate the rate constants from the slope of the plots and provided in the Table 1. It is noted that ~65 % of the catalytic activity is retained even after third recycle. However, a small decrease in catalytic activity of PHMAG catalyst in third recycle is probably due to the inevitable loss of the catalyst during the washing process.

Table 1 Rate constant values for different cycles.

No	Reycle no.	Rate constant (min⁻¹)
1	First cycle	$\sim 9.39 \times 10^{-2}$
2	Recycle 1	$\sim 7.14 \times 10^{-2}$
3	Recycle 2	$\sim 6.17 \times 10^{-2}$
4	Recycle 3	$\sim 5.3 \times 10^{-2}$

Table 2 Rate constant values for the catalytic reduction of *p*-nitrophenol by Ag nanoparticles with different diameter.

Diameter of Ag nanoparticles (nm)	Rate constant $k \times 10^{-2}$ (min^{-1})	References
~2.5-3.7	~42 x 10^{-2}	1
~6.2-6.8	~3.6 x 10^{-2}	2
~3 – 8.5	~19.2 x 10^{-2}	3
~10	~18 x 10^{-2}	4
~15	~12.01 x 10^{-2}	5
~20	~24.3 x 10^{-2}	6
~30	~6 x 10^{-2}	5
~20 - 30	~6.9 x 10^{-2}	7
~20 - 100	~19.68 x 10^{-2}	8
~30 -50	~3.2 x 10^{-2}	OUR WORK

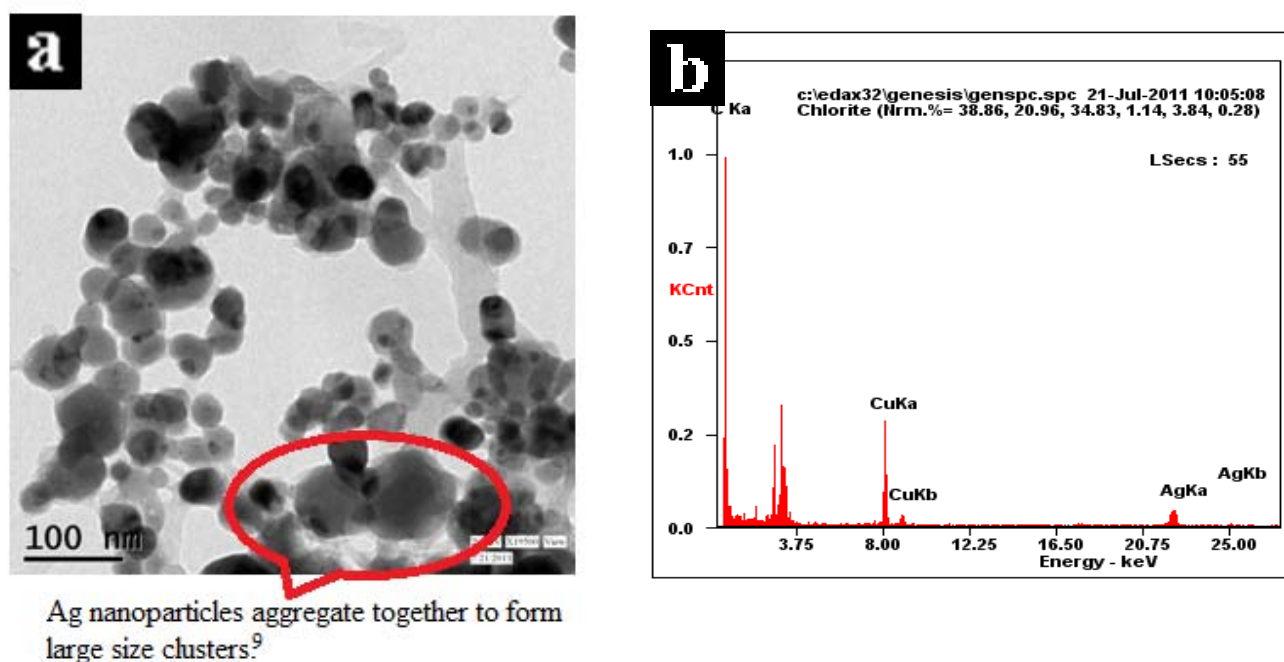


Fig S3 (a) TEM image of Ag nanoparticle and (b) EDS analysis of PHMAg

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