

## Supporting information

### Paper strips loaded with Ultrathin Gold Nanowires: Catalytic Activity and Stability in the p-nitrophenol reduction.

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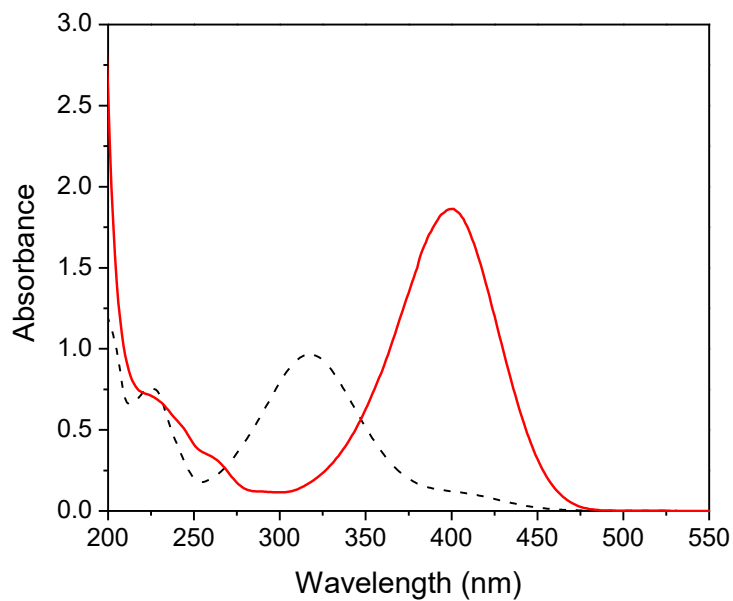
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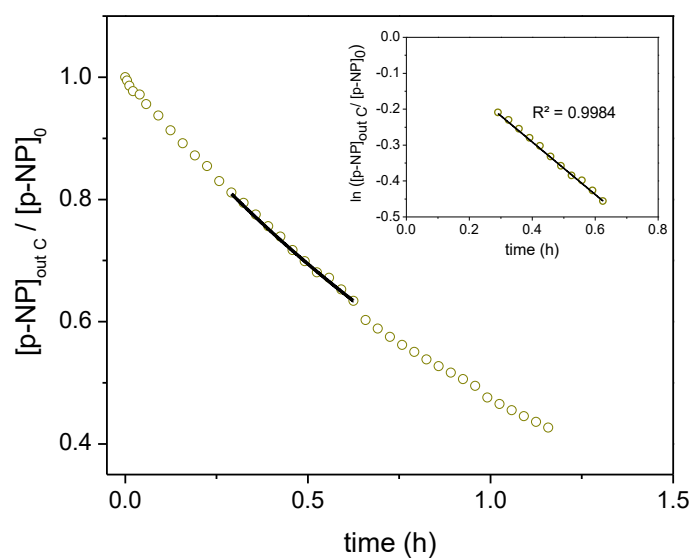
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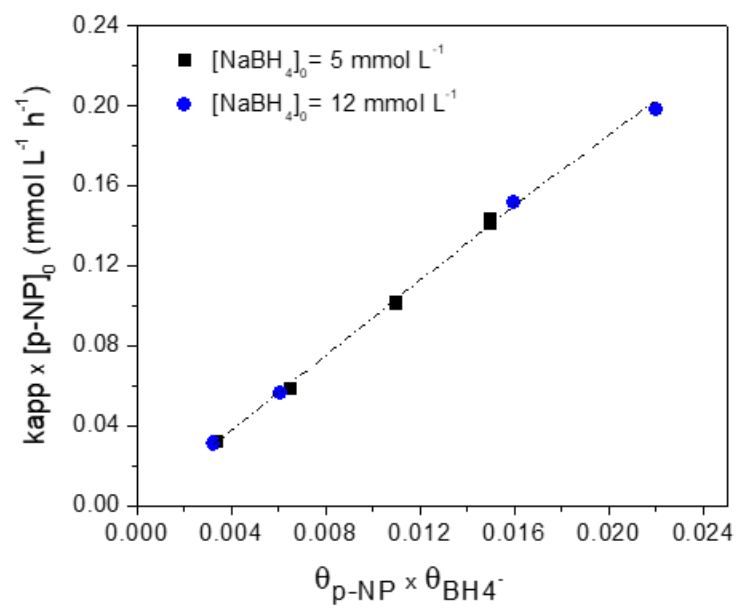
**Figure S1.** (a) Image of a water droplet deposited on the surface of an AuNW/FP-a strip, showing the water repellency of the surface; (b) Image of a water droplet deposited on the surface of raw filter paper, showing the hydrophilicity of the surface;



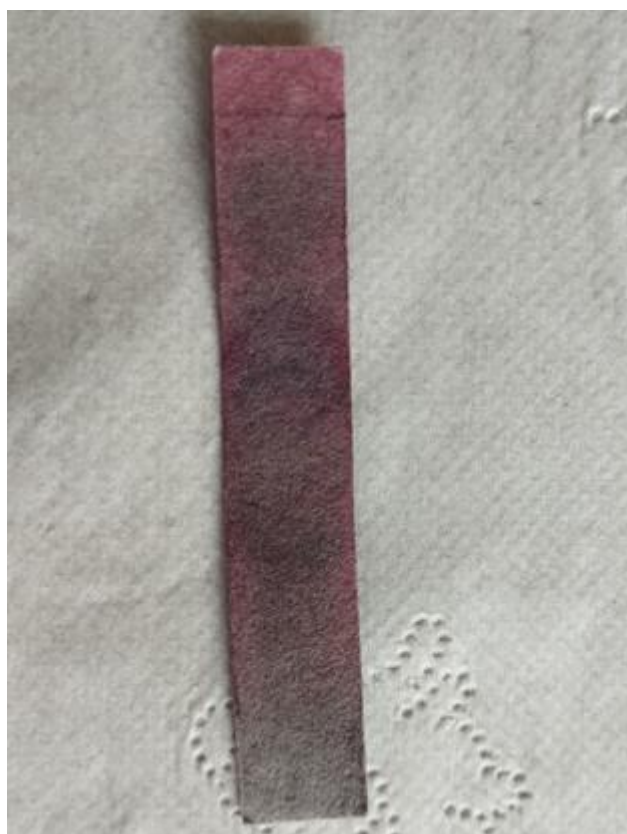
**Figure S2.** UV-vis spectra showing the characteristic absorbance of p-NP before (black, dashed line) and after (red, solid line) the addition of NaBH<sub>4</sub>.



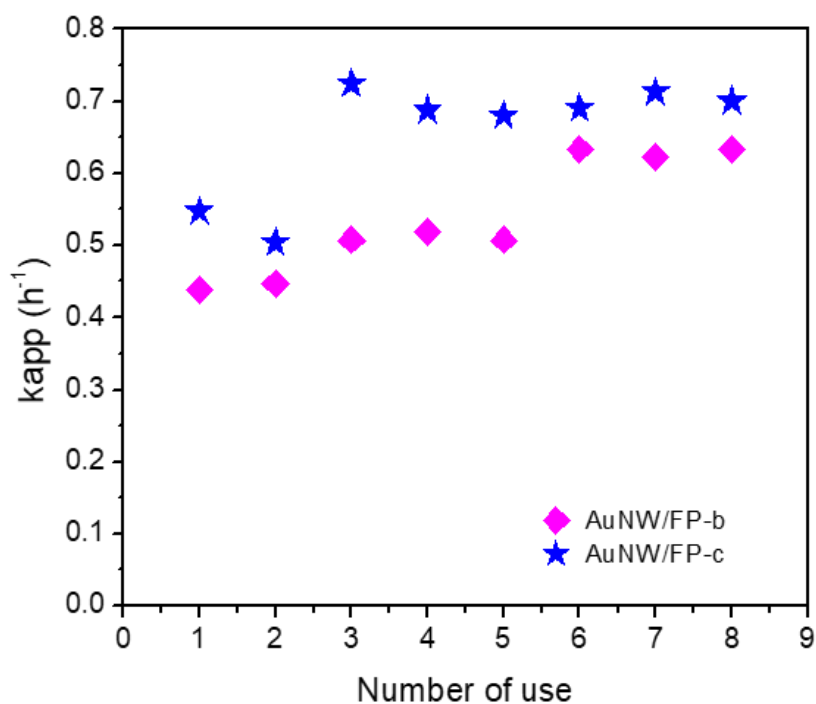
**Figure S3.** Representative time evolution of normalized  $[p-NP]_{out\ C}$  of experiments with AuNW/FP-a after reaching a stable condition.  $[NaBH_4]_0 = 5\text{ mmol L}^{-1}$ ,  $[p-NP]_0 = 0.1\text{ mmol L}^{-1}$ . Solid line corresponds to the fit of the model. Inset shows the goodness of the fit of  $\ln([p-NP]_{out\ C} / [p-NP]_0)$  vs. time.



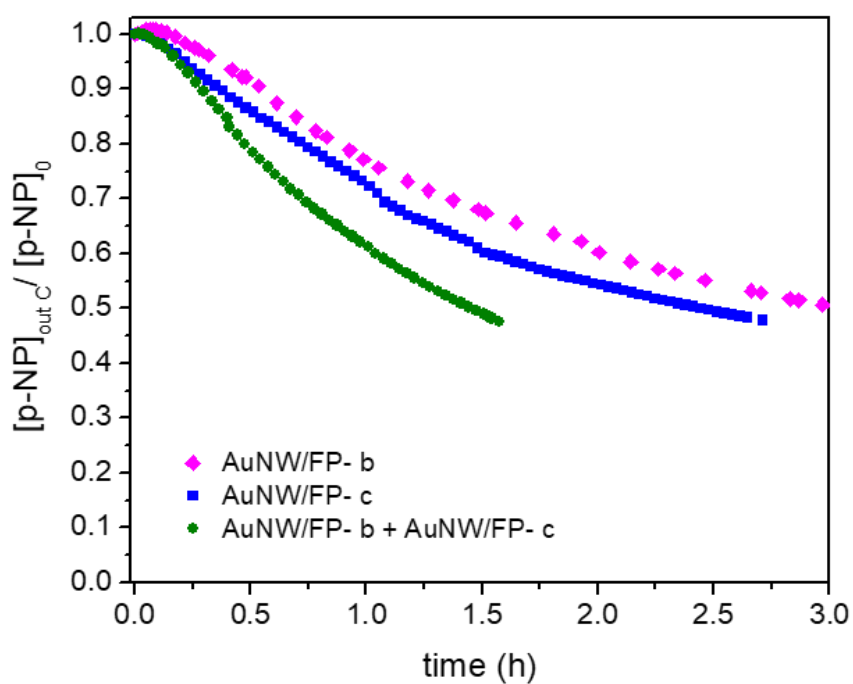
**Figure S4.** Product of the estimated  $k_{app}$  and initial p-NP concentrations ( $k_{app} \times [p-NP]_0$ ) vs  $\theta_{p-NP} \times \theta_{BH_4^-}$ .  $k_s = 9.4 \times 10^{-3} \text{ mol L}^{-1} \text{ h}^{-1}$  ( $R^2 = 0.9993$ ).



**Figure S5.** Image of AuNW/FP-b strip



**Figure S6.** Estimated  $k_{app}$  values or successive reaction cycles using one strip of AuNW/FP-b or AuNW/FP-c,  $[NaBH_4]_0 = 5 \text{ mmol L}^{-1}$  and  $[p-NP]_0 = 0.1 \text{ mmol L}^{-1}$ .



**Figure S7.** Representative time evolution of normalized  $[p-NP]_{out,c}$  of experiments with AuNW/FP-b and AuNW/FP-c after reaching a stable condition, compared with that attained in an experiment in which AuNW/FP-b and AuNW/FP-c were combined.  $[NaBH_4]_0 = 5 \text{ mmol L}^{-1}$ ,  $[p-NP]_0 = 0.1 \text{ mmol L}^{-1}$ .