Electronic Supplementary Information (ESI)

Shape-controlled Synthesis of Pt Nanoframes

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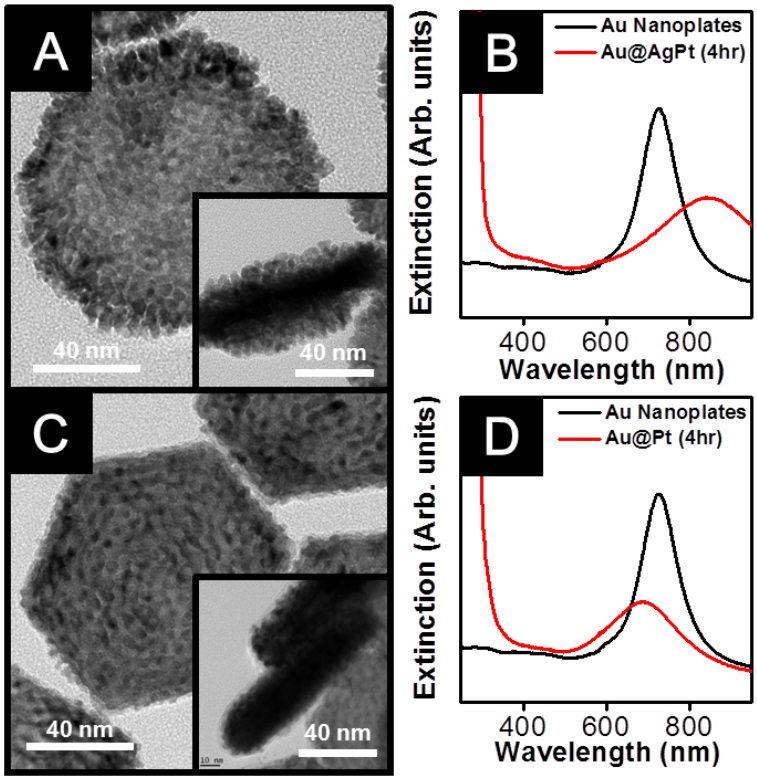

Figure S1. TEM images and UV-vis-NIR spectra for the comparison between (A, B) Au@AgPt nanoplates and (C, D) Au@Pt nanoplates. These data demonstrate that the existence of Ag layer plays a critical role in Pt growth. Au@AgPt nanoplates have thicker and more rough surface than Au@Pt ones. We can observe each spectrum indicating the change as growing Pt (red line in (B), (D)) with the identical Au nanoplate seeds (black line). Particularly, at the edge site of Au@AgPt nanoplates, the resultant roughened surface induces the increase of path for SPR, which is consistent with the red-shift in spectra (B). On the other hand, without the Ag layer, Pt ions are reduced uniformly all over the Au surface, and the deposited Pt layer onto Au nanoplates results in the blue shift in spectra (D) due to the decrease of aspect ratio, meaning the formation of thicker nanoplates.

	3A		3B		3C	
	I	II	I	II	I	II
Au	47.4	29.2	37.4	17.3	30.6	12.1
Ag	2.7	0.0	4.5	0.0	7.9	0.0
Pt	49.9	70.8	58.1	82.7	61.5	87.9

Table S1. A table indicating EDS analysis for Au@AgPt nanoplates (Ⅰ) before and (Ⅱ) after Au etching process. Each Pt nanoframes (Ⅱ) were the same sample as presented in Fig. 3A, 3B, and 3C.