Supplementary Information

Hollow Au@Pd and Au@Pt Core-Shell Nanoparticles as Electrocatalysts for Ethanol Oxidation Reactions

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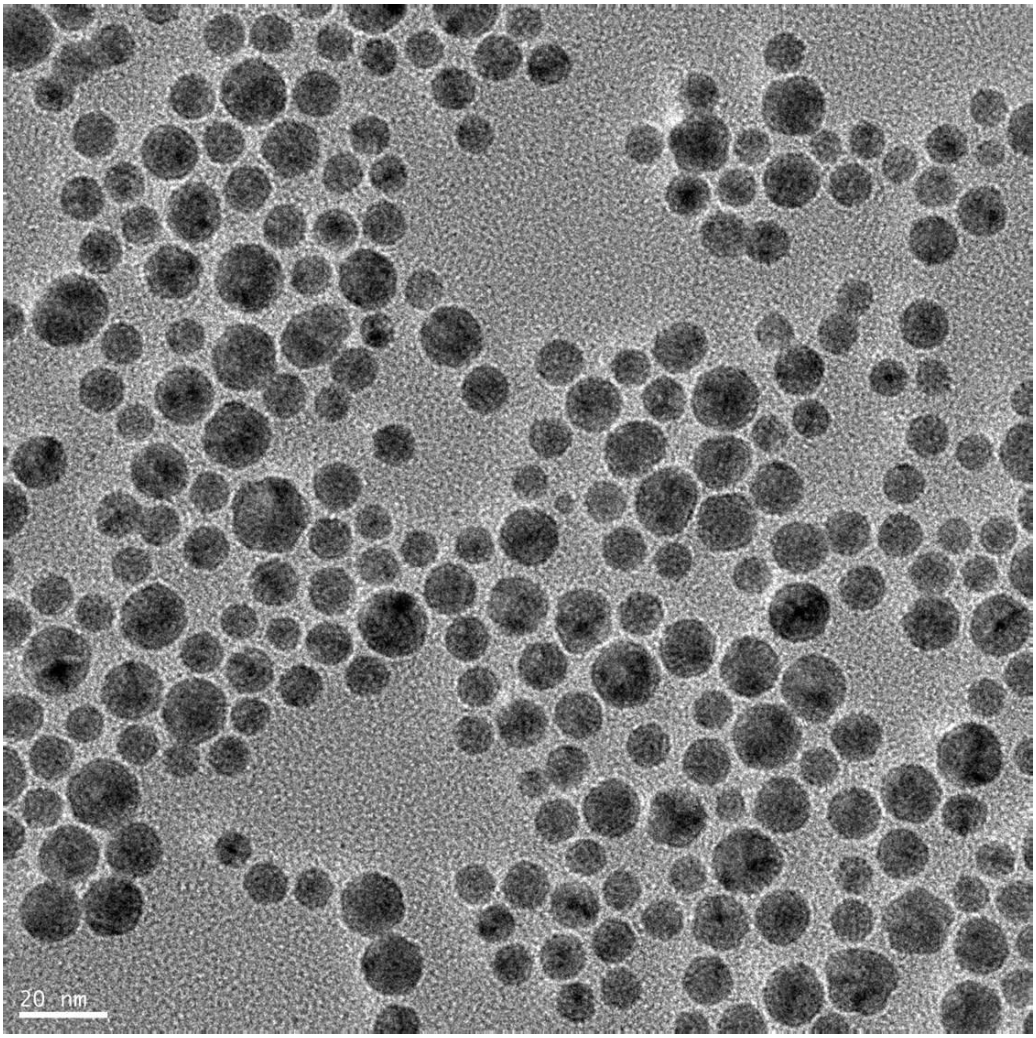


Fig. S1 TEM image of silver NPs synthesized at 160 °C in the absence of 1,2-hexadecanediol.

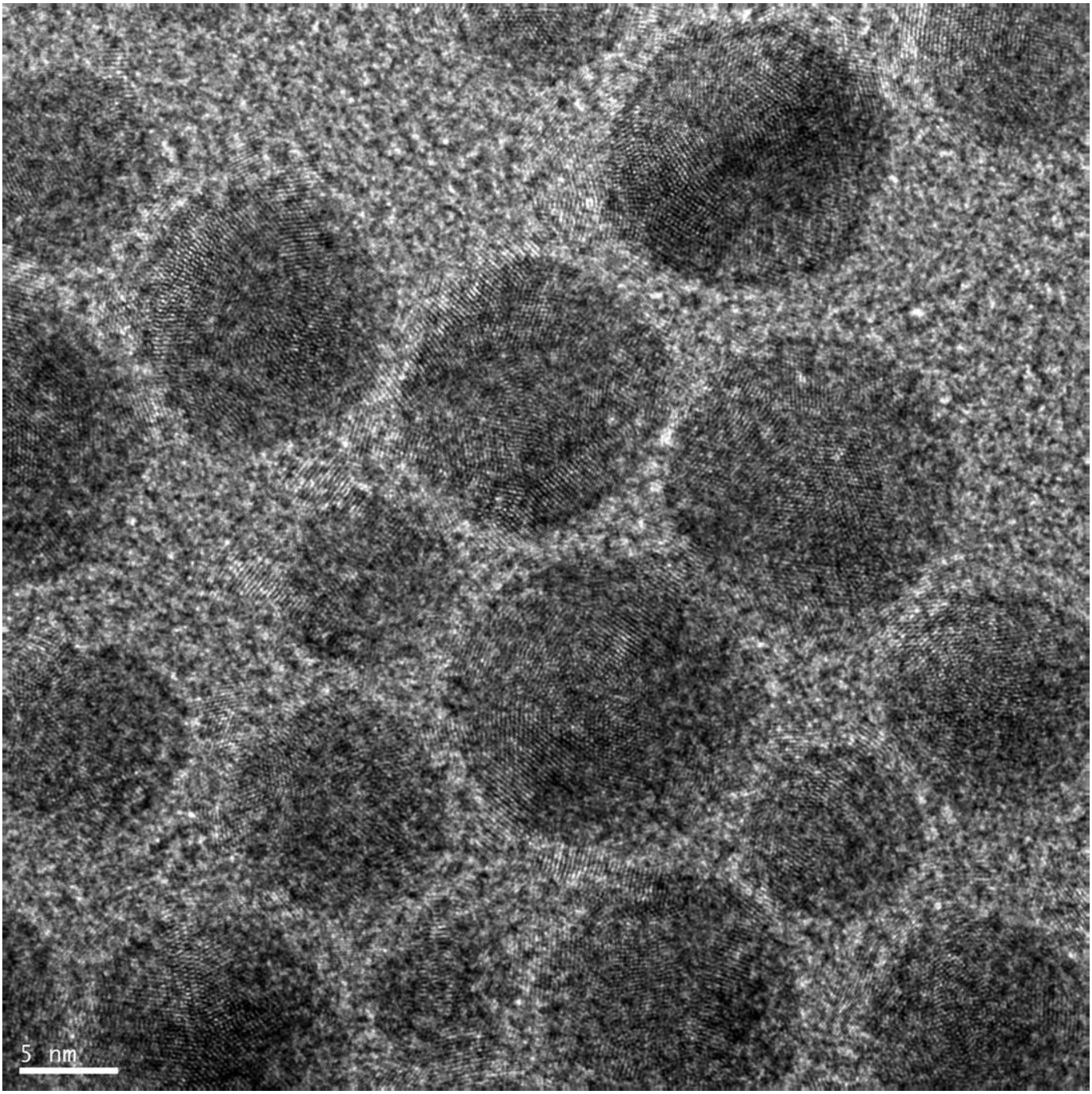


Fig. S2 HRTEM image of silver NPs synthesized at 160 °C in the absence of 1,2-hexadecanediol.

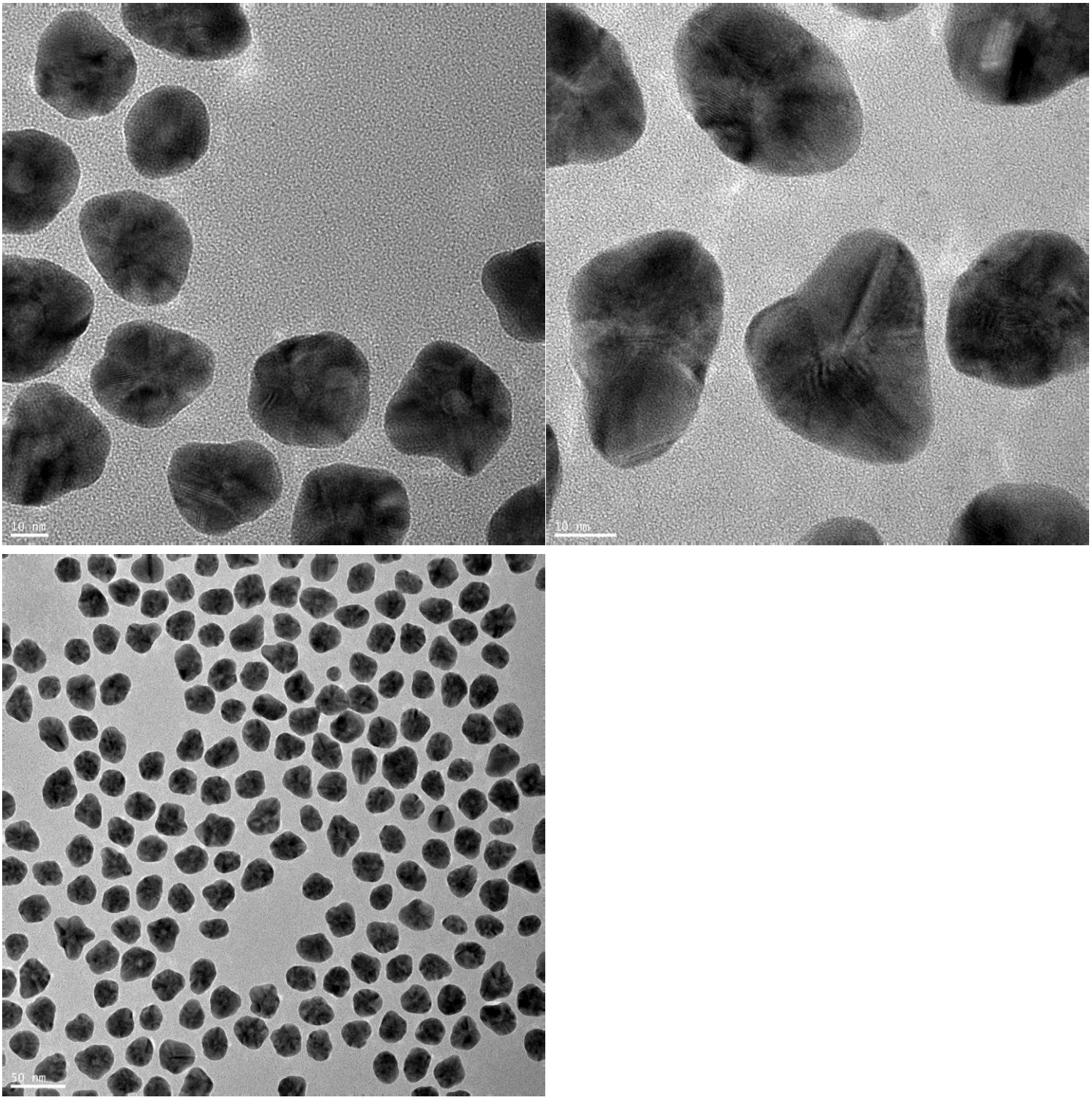


Fig. S3TEM images of hollow Au NPs.

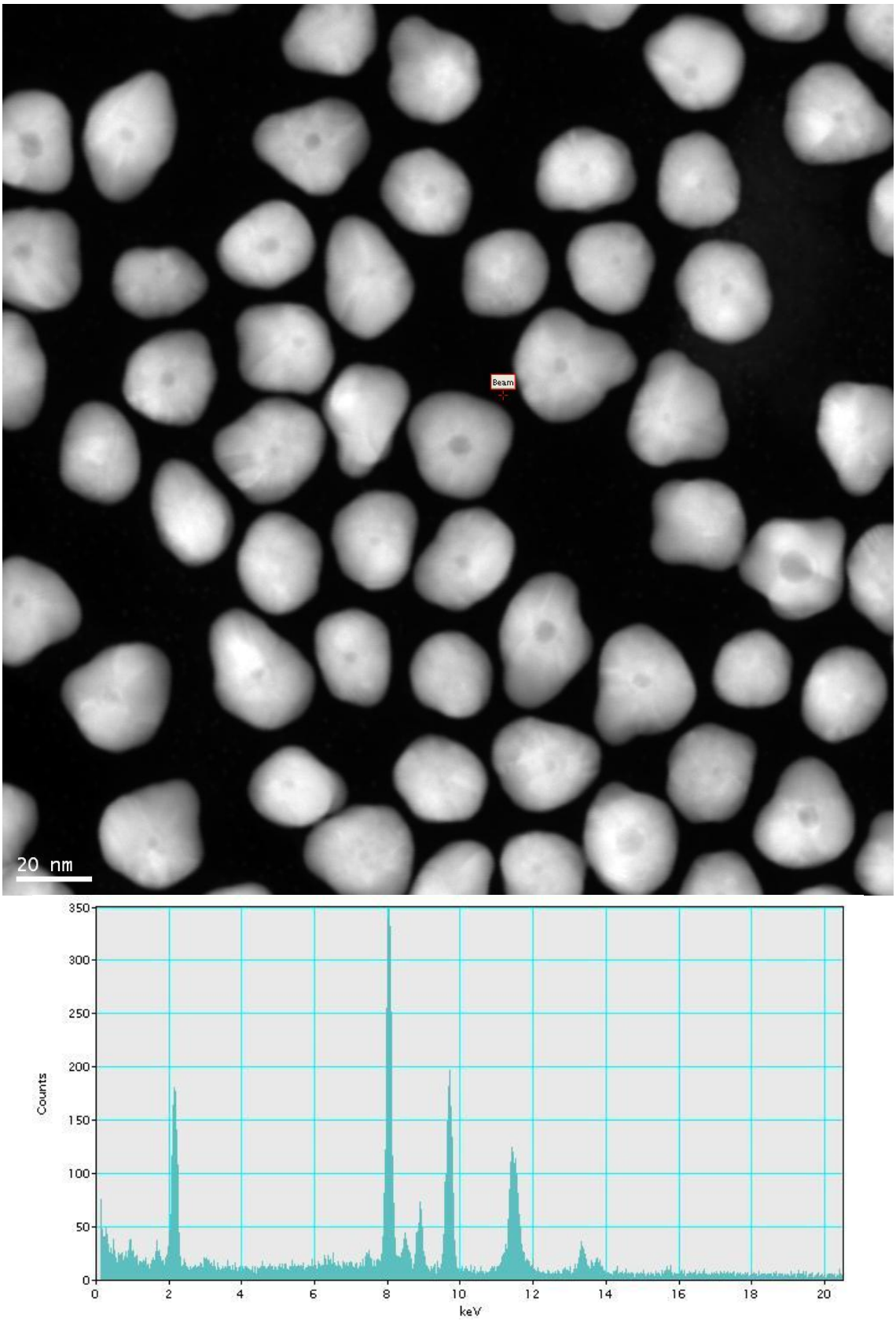
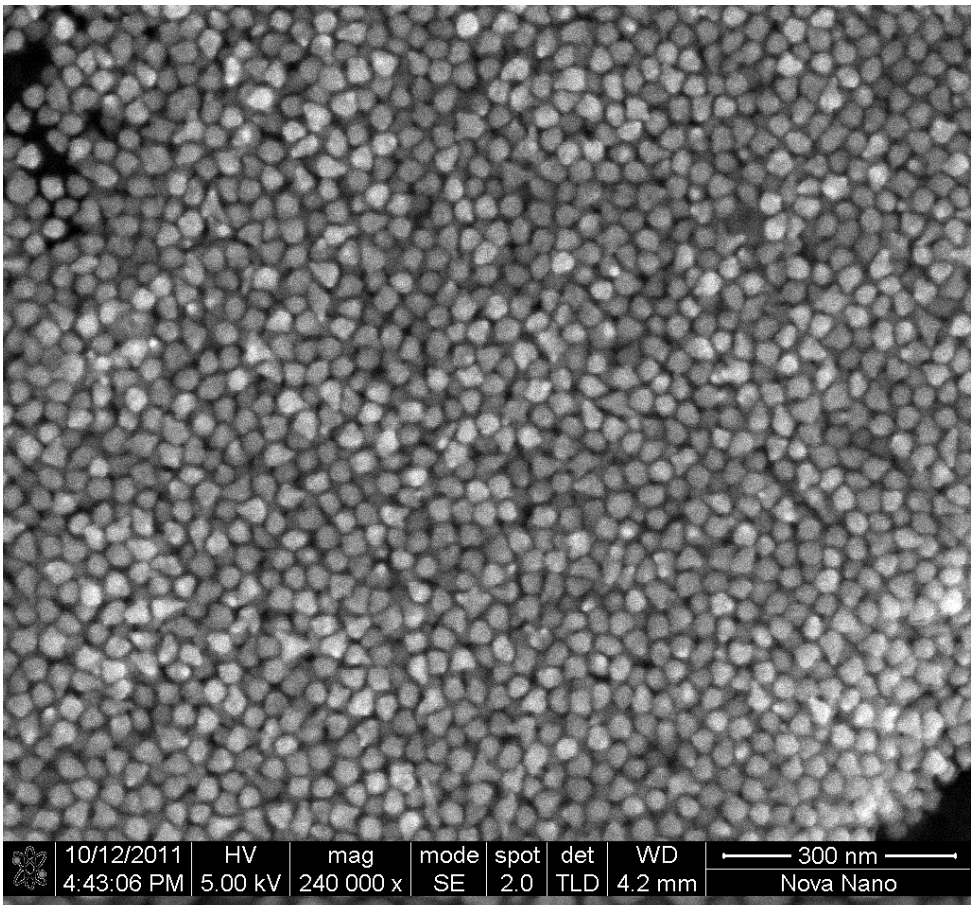


Fig. S4 (upper) STEM image and (bottom) EDS spectrum of hollow Au NPs.



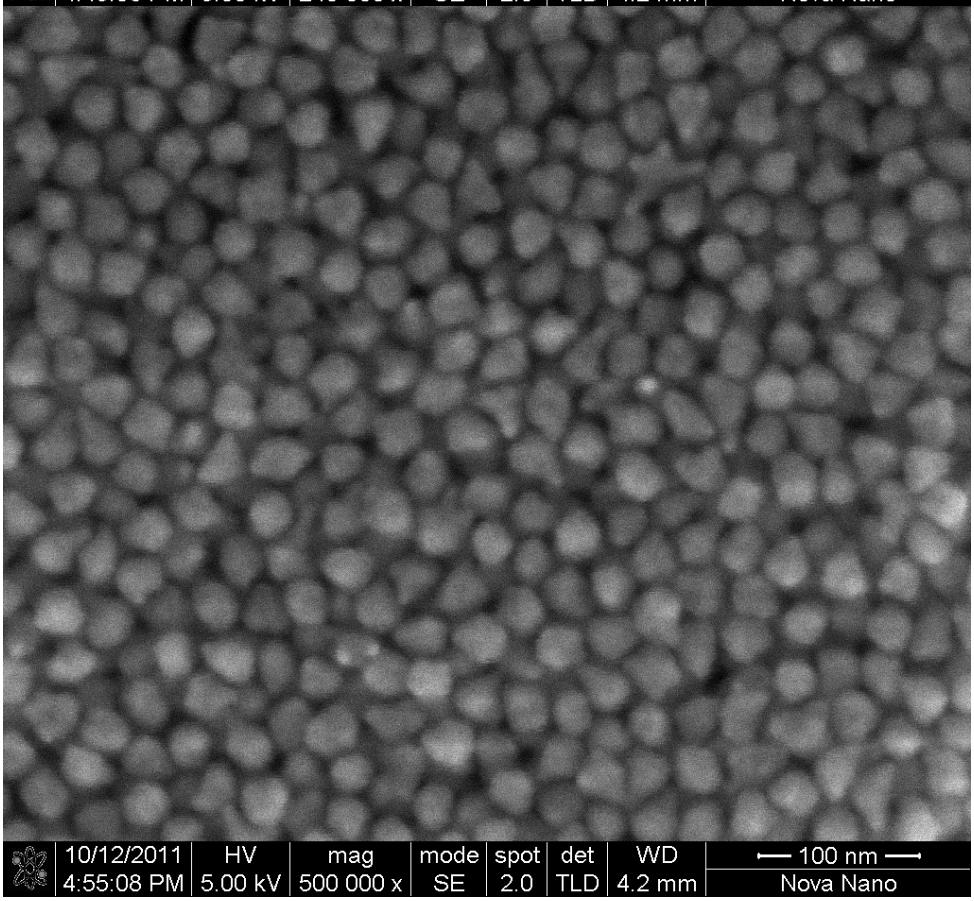


Fig. S5 SEM images of hollow Au NPs.

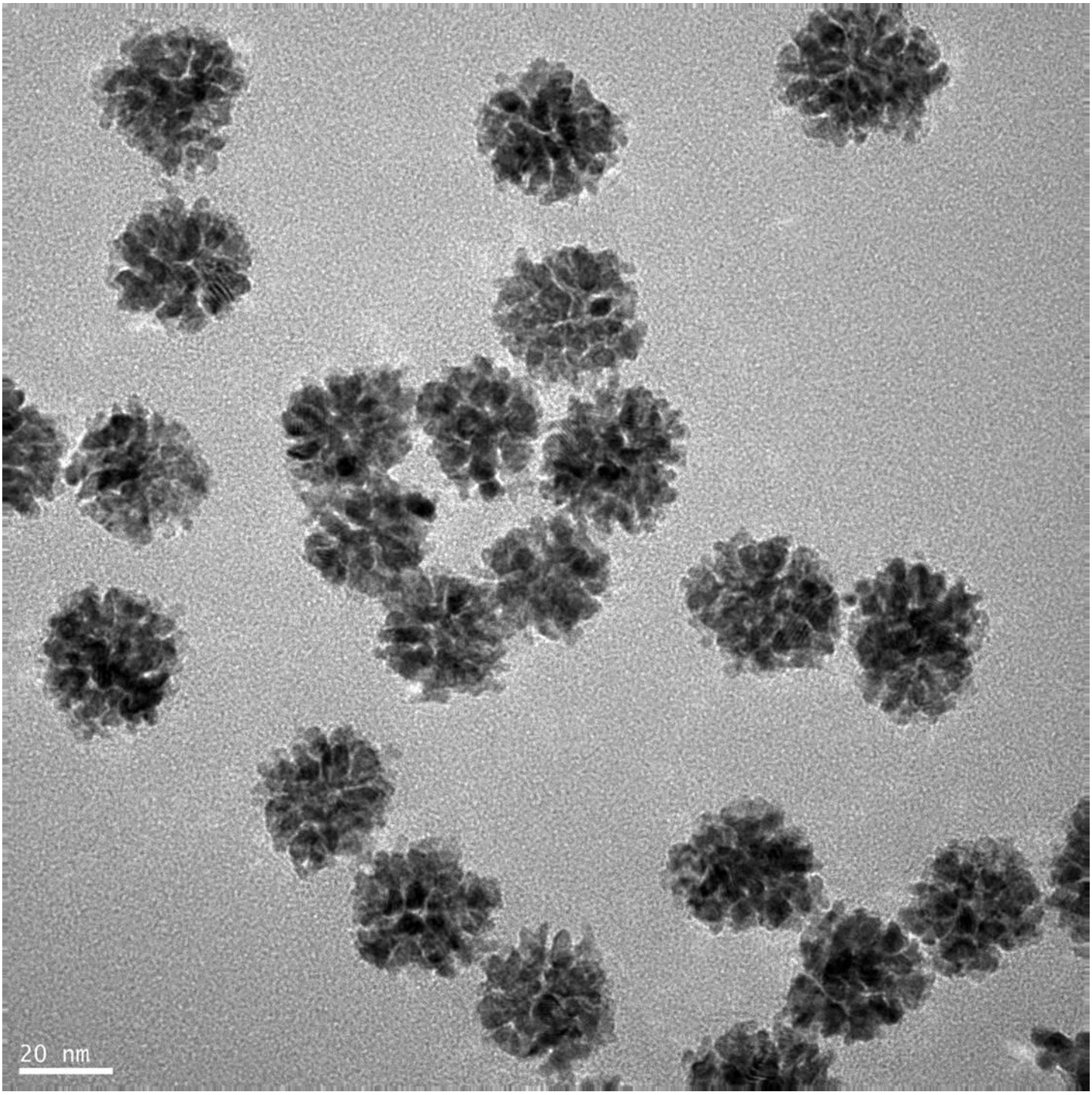


Fig. S6 TEM image of hollow Pt NPs prepared at 75 °C for 1 hour.

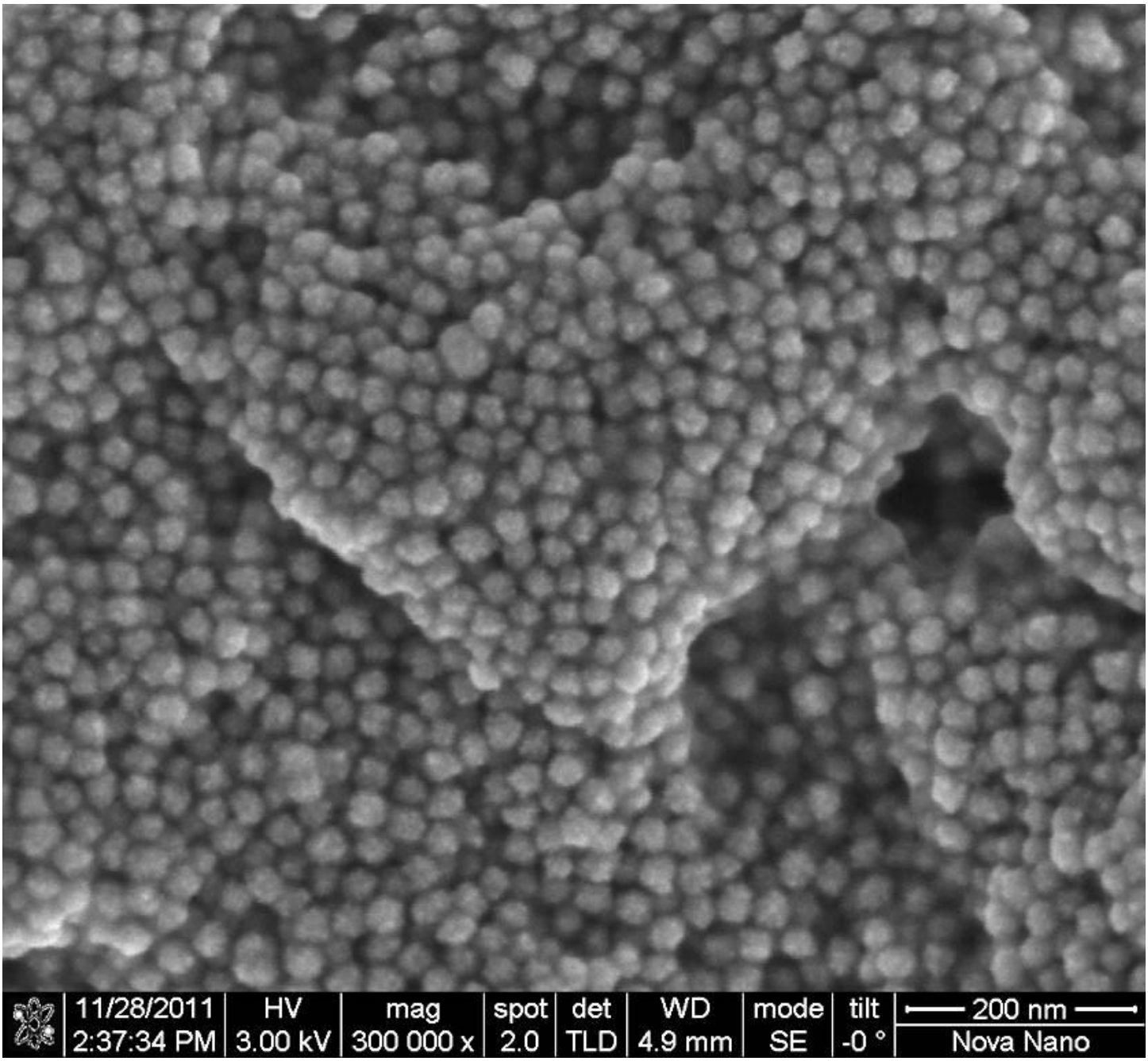


Fig. S7 SEM images of hollow Pt NPs prepared at 75 °C for 1 hour.

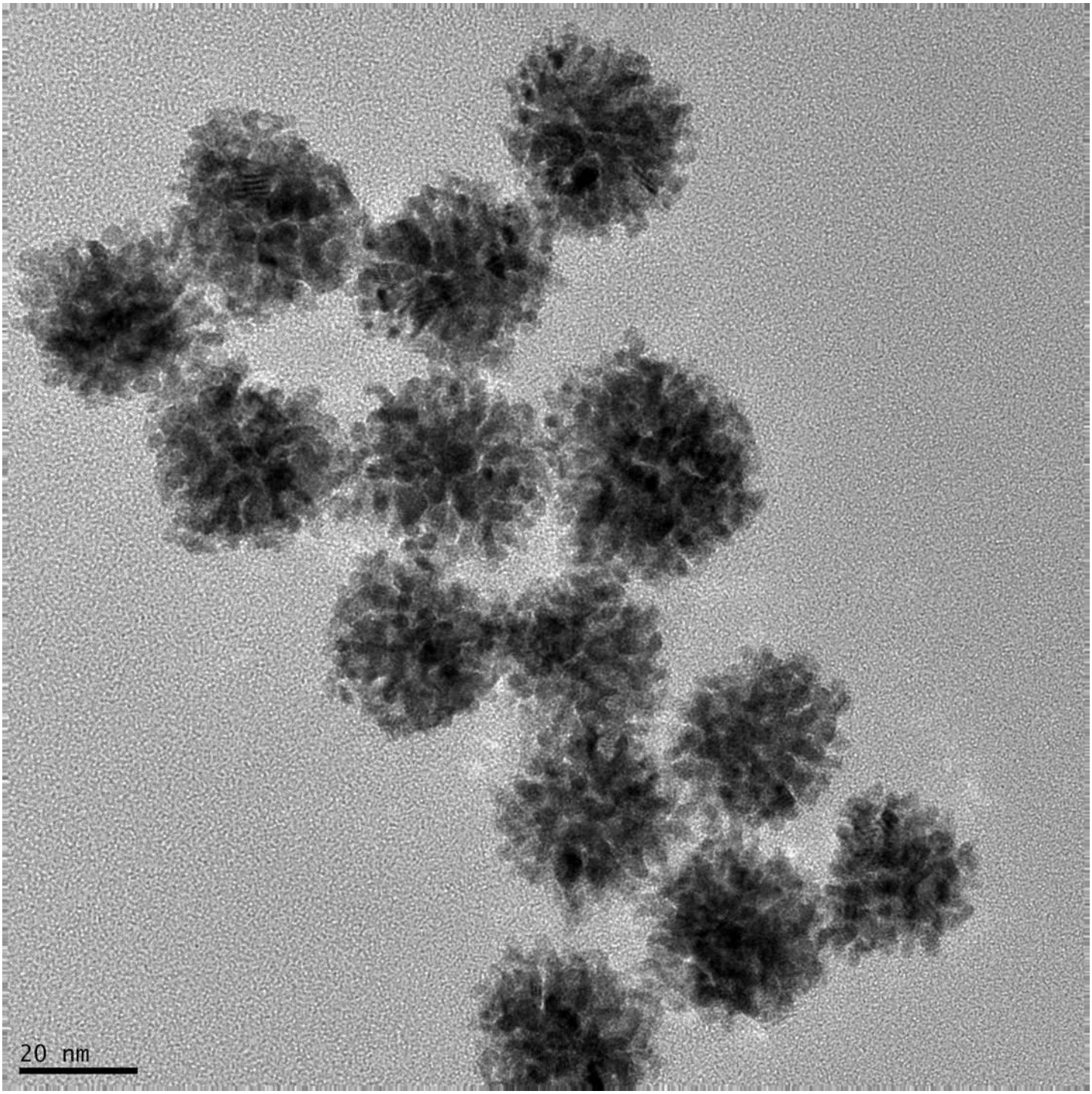


Fig. S8 TEM image of hollow Pt NPs prepared at 75 °C for 3 hours.

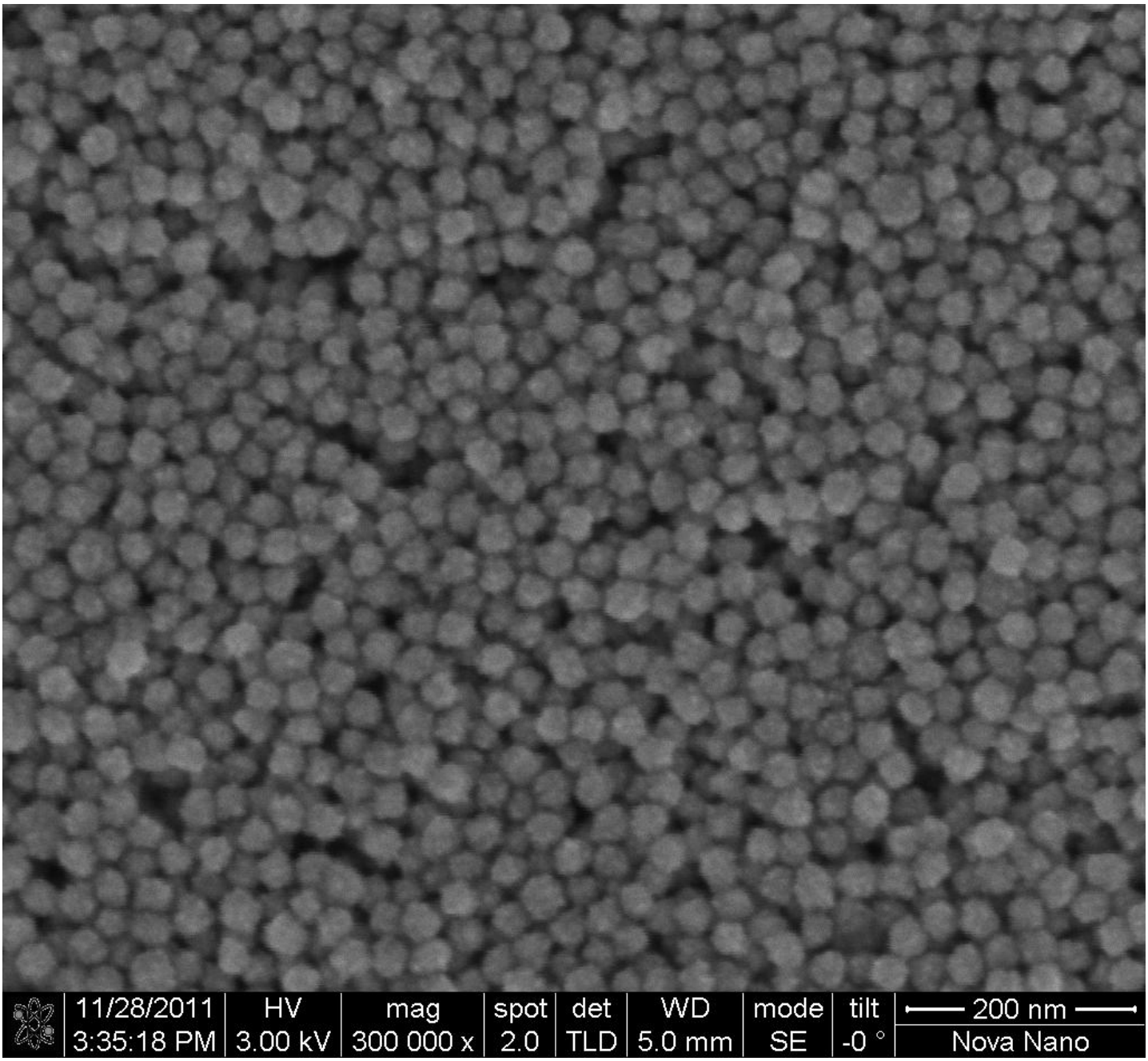


Fig. S9 SEM images of hollow Pt NPs prepared at 75 °C for 3 hours.

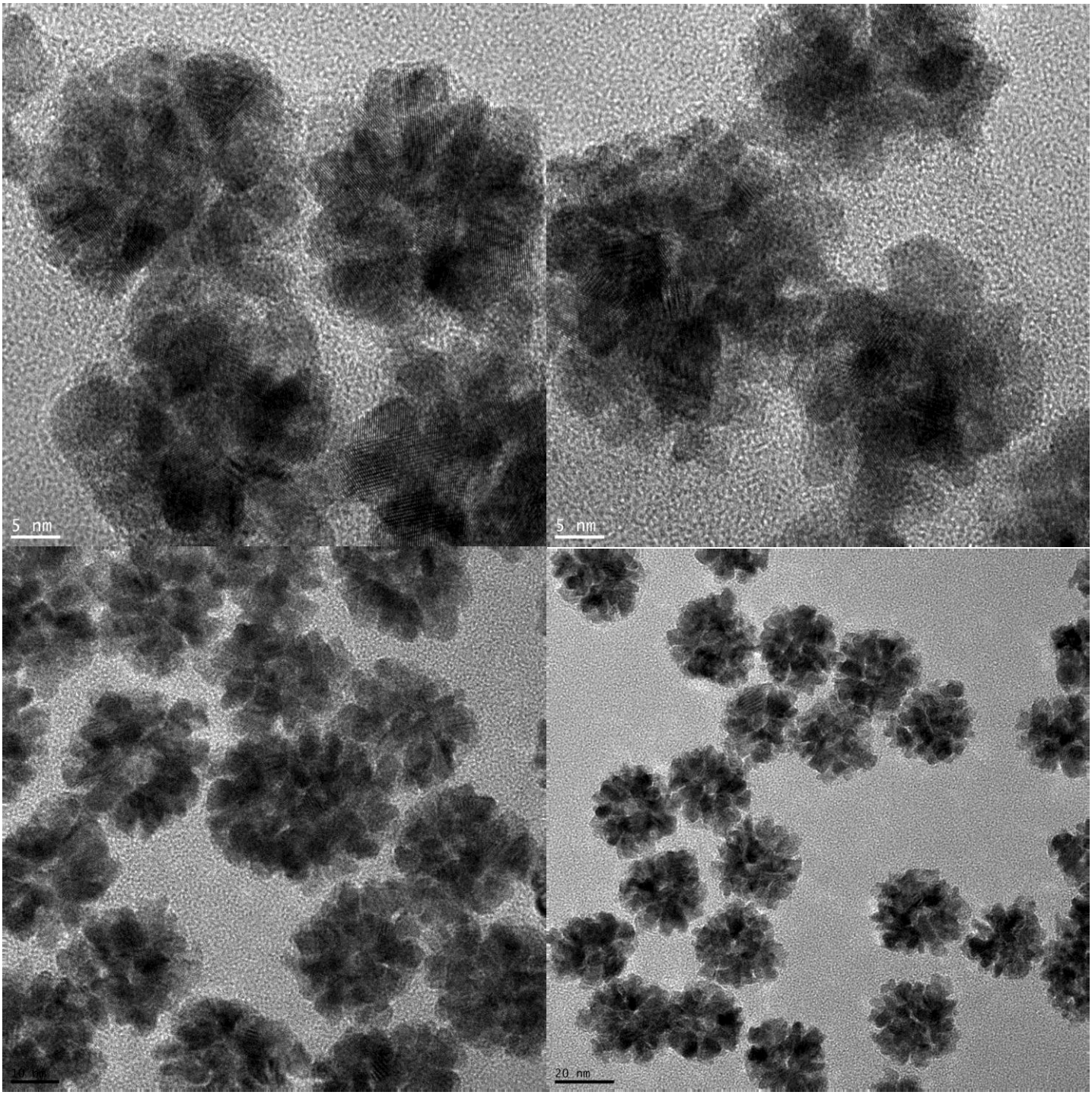


Fig. S10 HRTEM and TEM images of hollow Au@Pt core-shell NPs prepared with 70 µL of $HAuCl_4$ (10 mM).

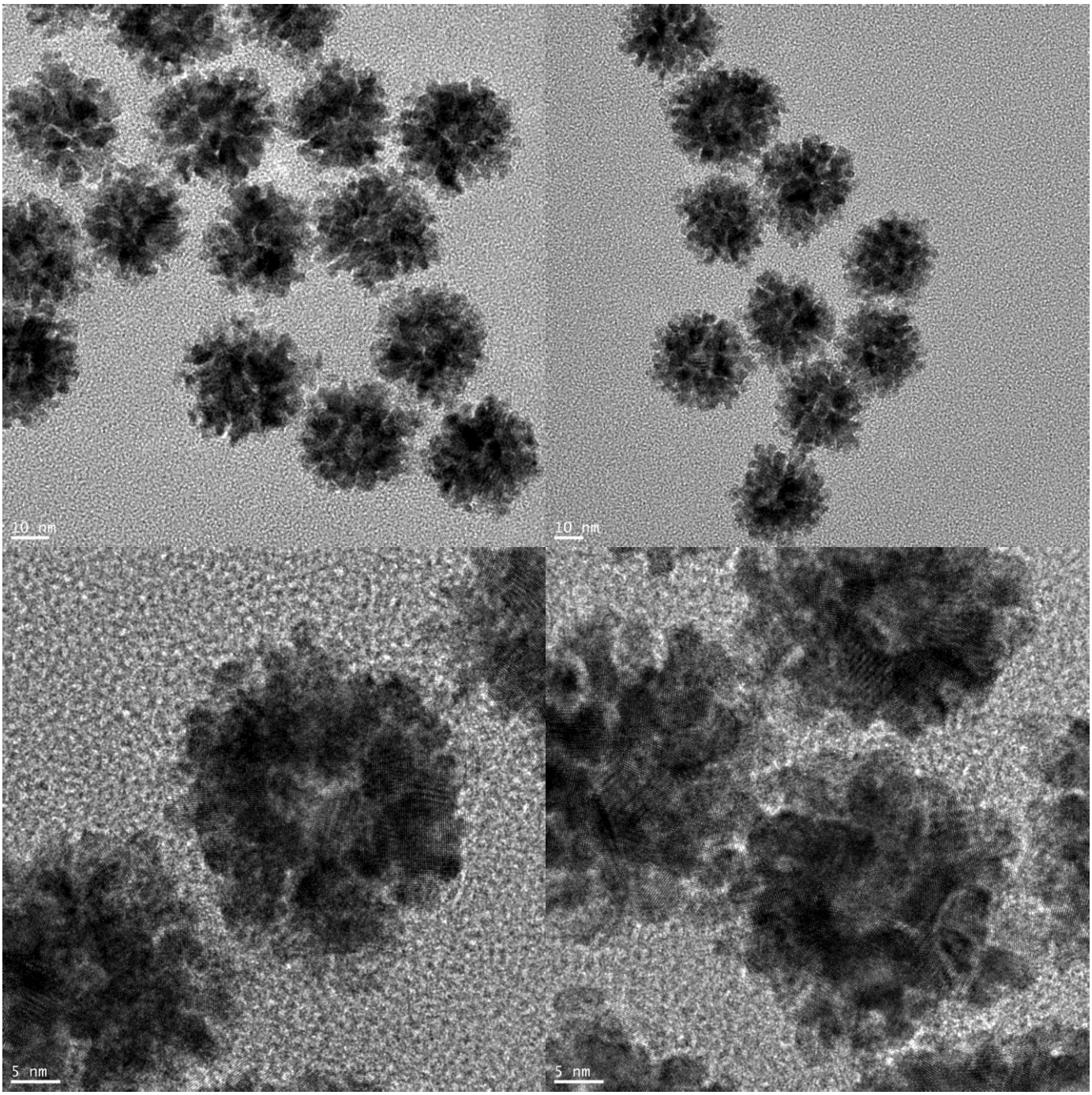


Fig. S11 HRTEM and TEM images of hollow Au@Pt core-shell NPs prepared with 100 µL of $HAuCl_4$ (10 mM).

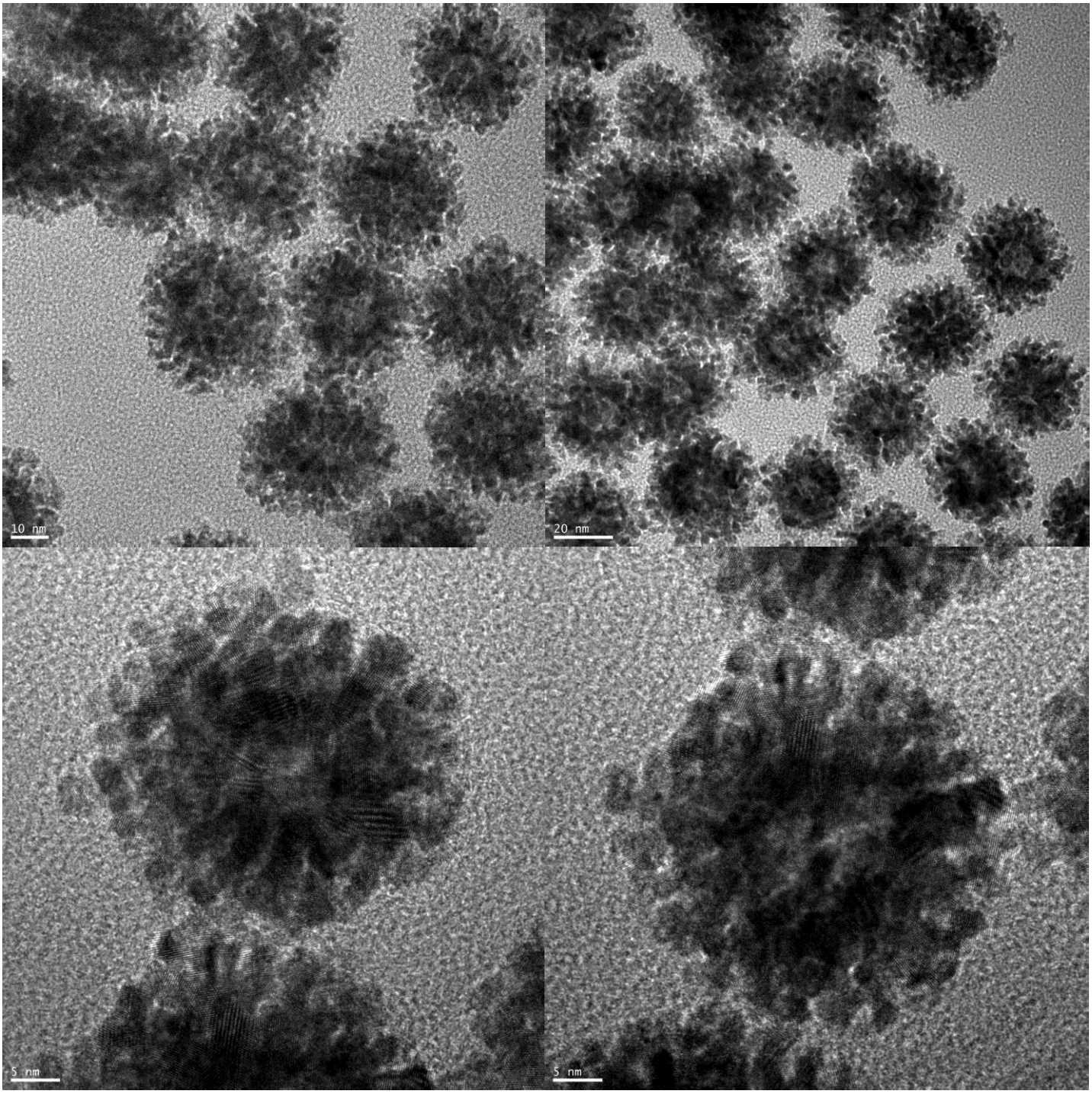


Fig. S12 HRTEM and TEM images of hollow Au@Pt core-shell NPs prepared with 200 μL of $HAuCl_4$ (10 mM).

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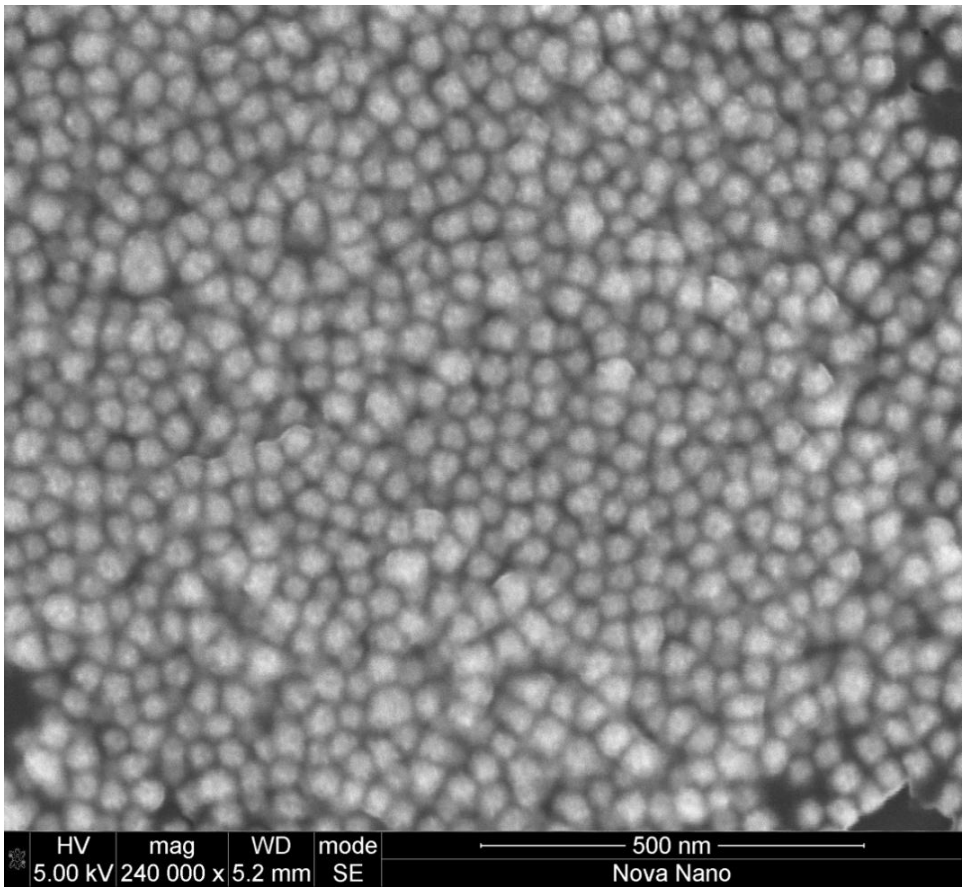
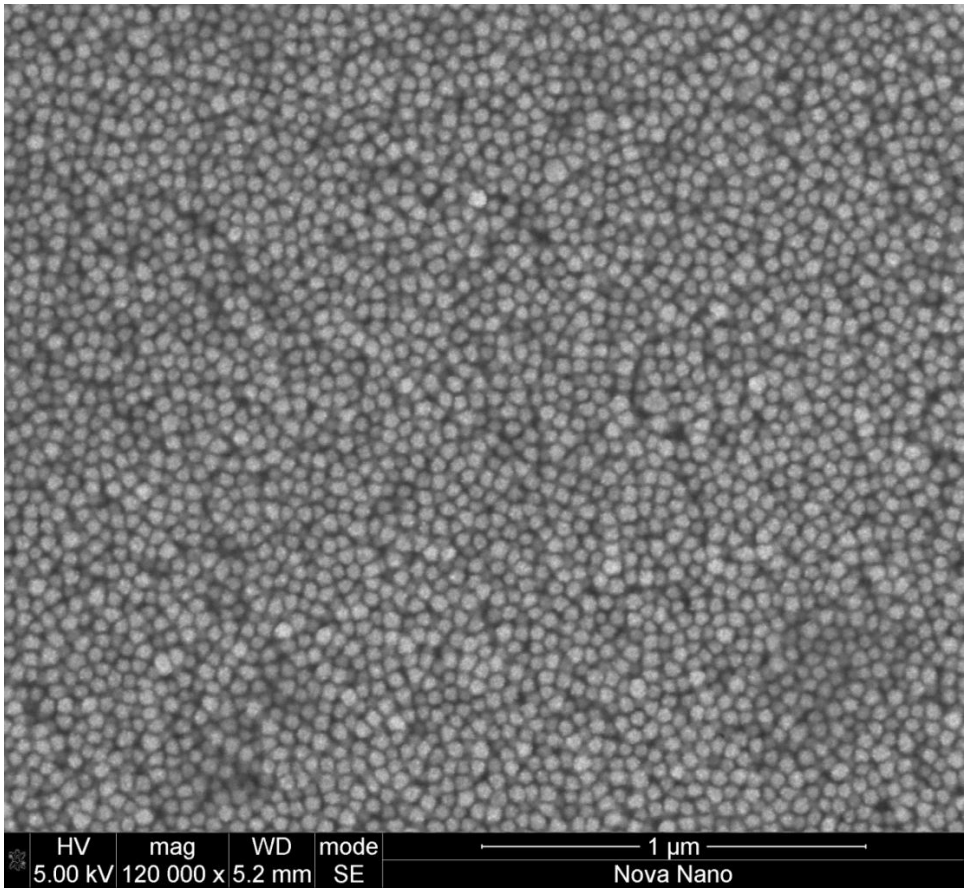
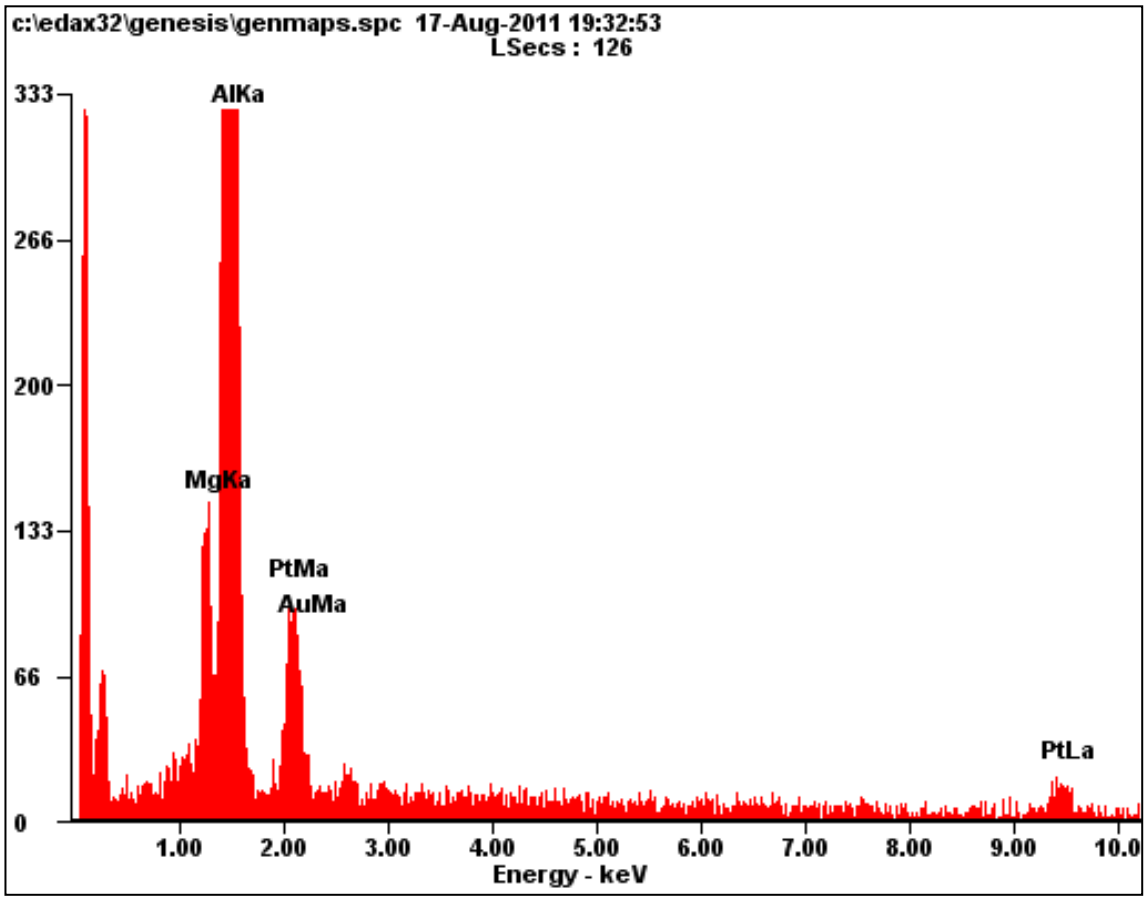






Element	*Wt%*	*At%*
MgK	03.91	05.94
AlK	64.26	88.04
AuM	02.51	00.47
PtL	29.32	05.55
Matrix	Correction	ZAF

Fig. S13 (upper) EDX spectrum and (bottom) table of elemental ratio of hollow Au@Pt core-shell NPs prepared with the amount of 200 µL of $HAuCl_4$ (10 mM).

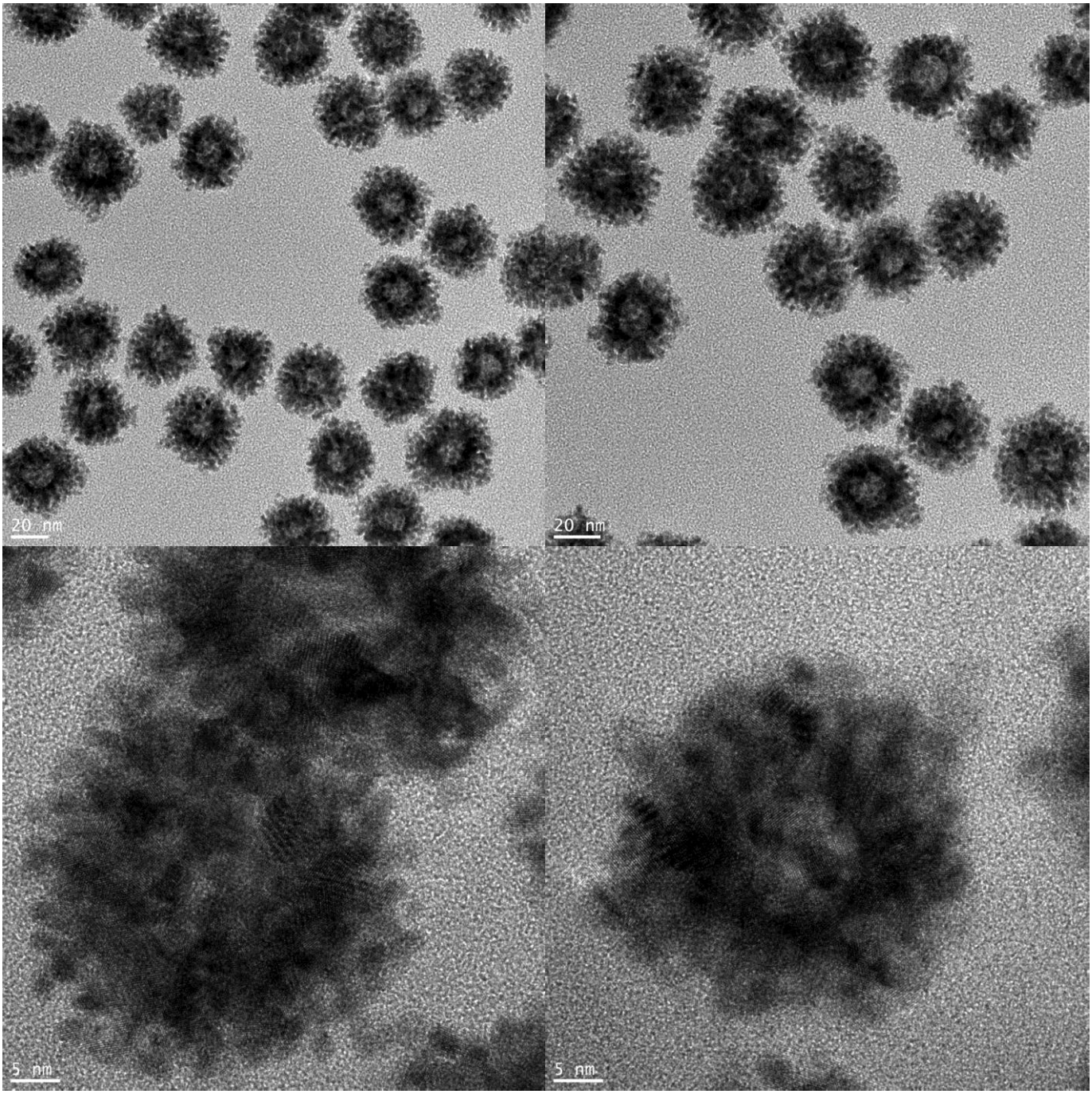


Fig. S14 HRTEM and TEM images of hollow Au@Pt core-shell NPs prepared with 320 μL of $HAuCl_4$ (10 mM).

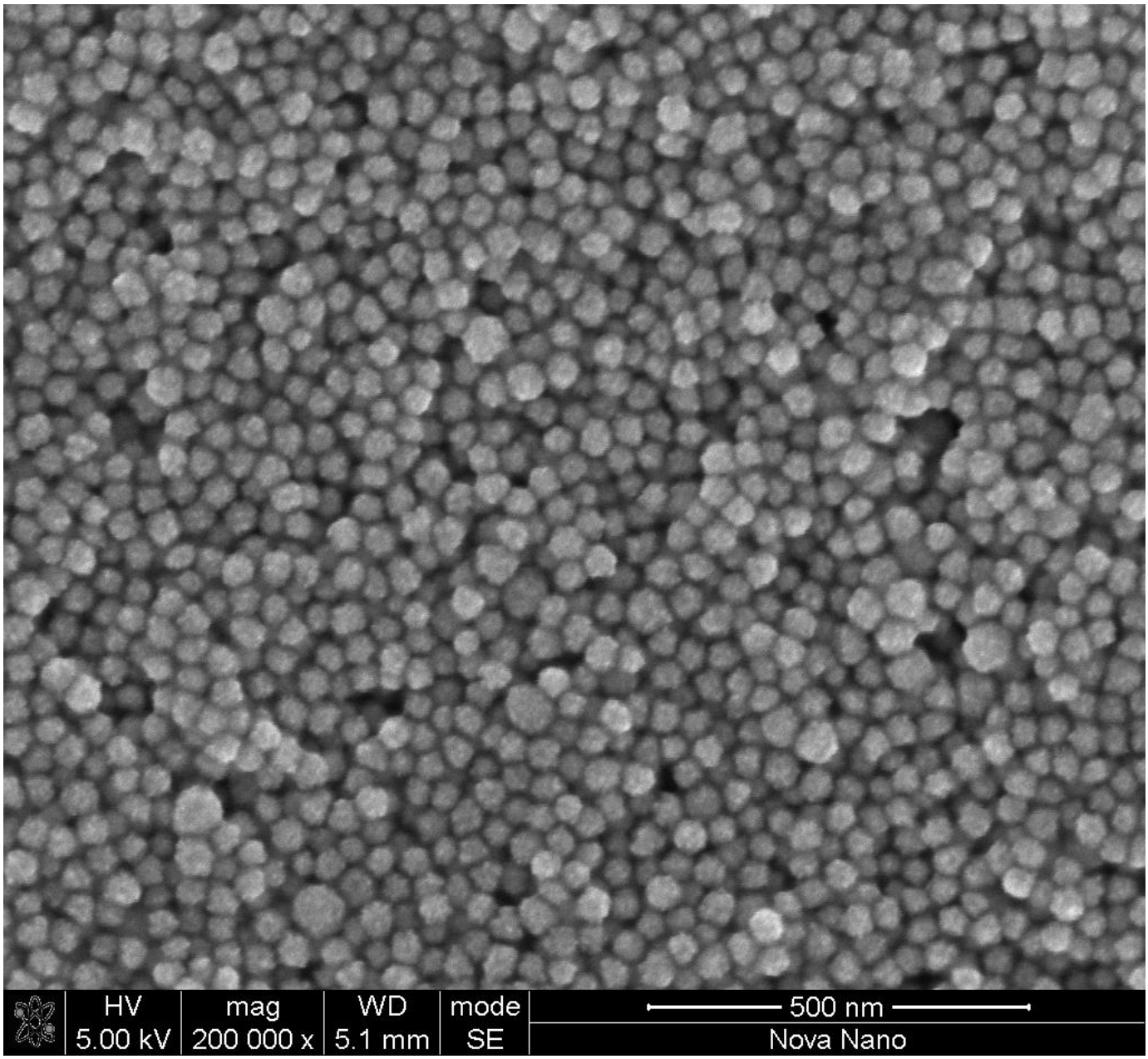
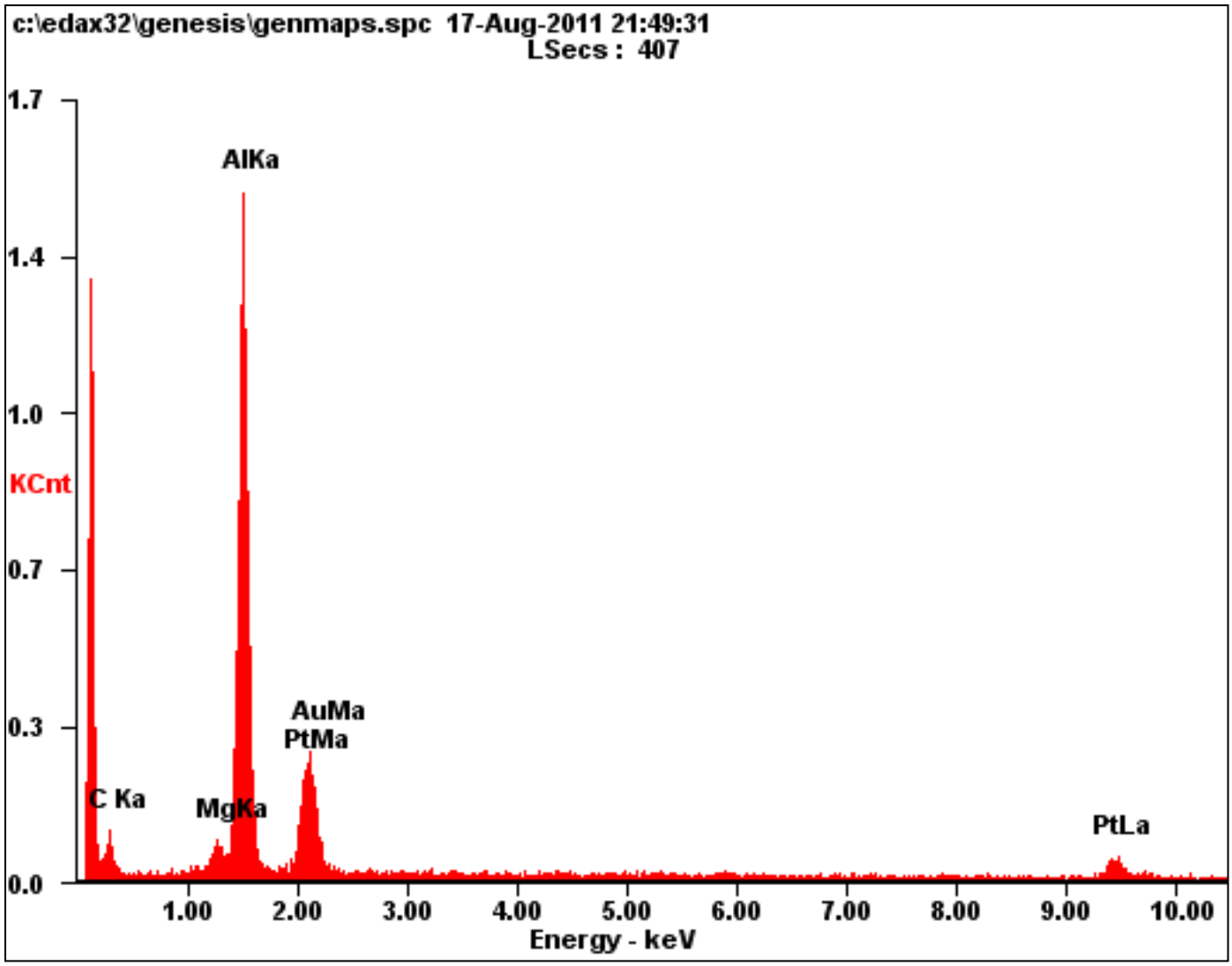


Fig. S15 SEM image of hollow Au@Pt core-shell NPs prepared with the amount of 320 µL of $HAuCl_4$ (10 mM).



Element	*Wt%*	*At%*
CK	12.05	39.52
MgK	01.75	02.83
AlK	31.99	46.71
AuM	03.13	00.63
PtL	51.07	10.31
Matrix	Correction	ZAF

Fig. S16 (upper) EDX spectrum and (bottom) table of elemental ratio of hollow Au@Pt core-shell NPs prepared with the amount of 320 μL of $HAuCl_4$ (10 mM).

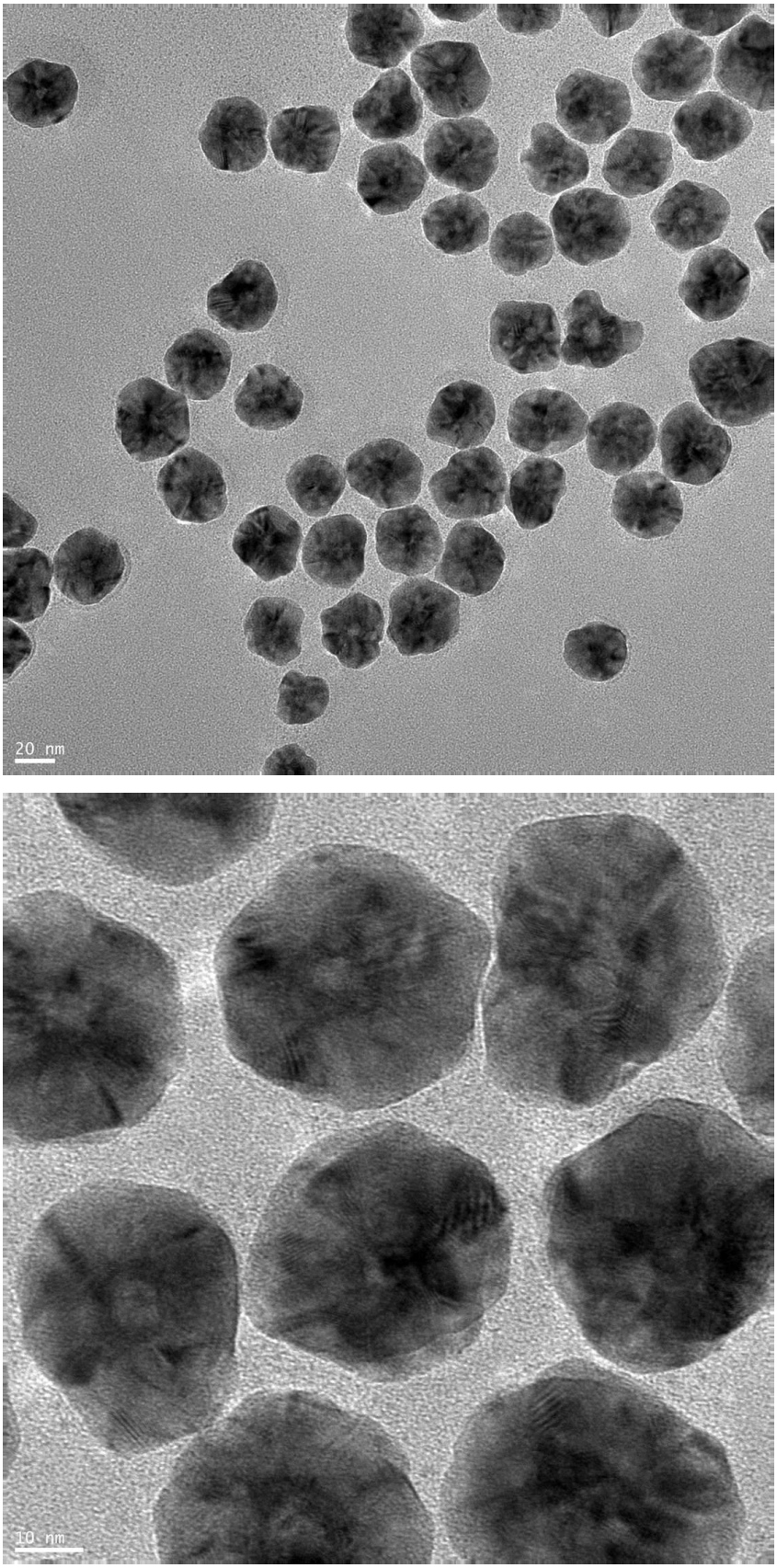
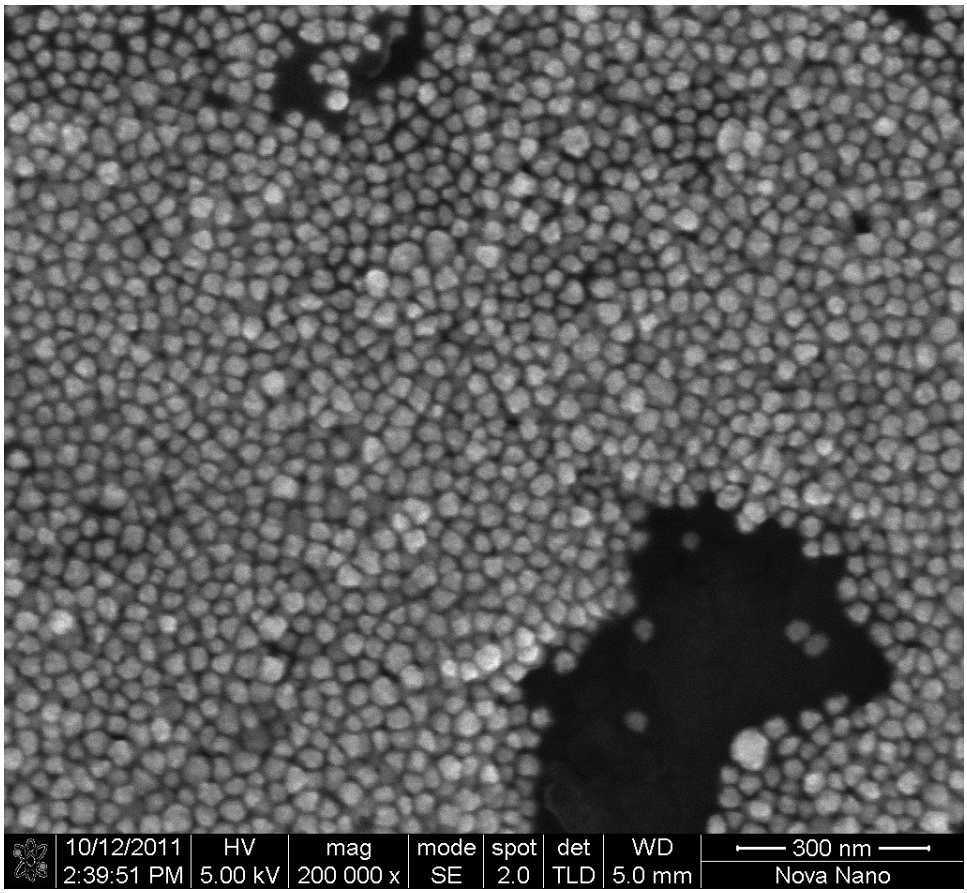


Fig. S17 TEM images of hollow Au@Pd core-shell NPs.



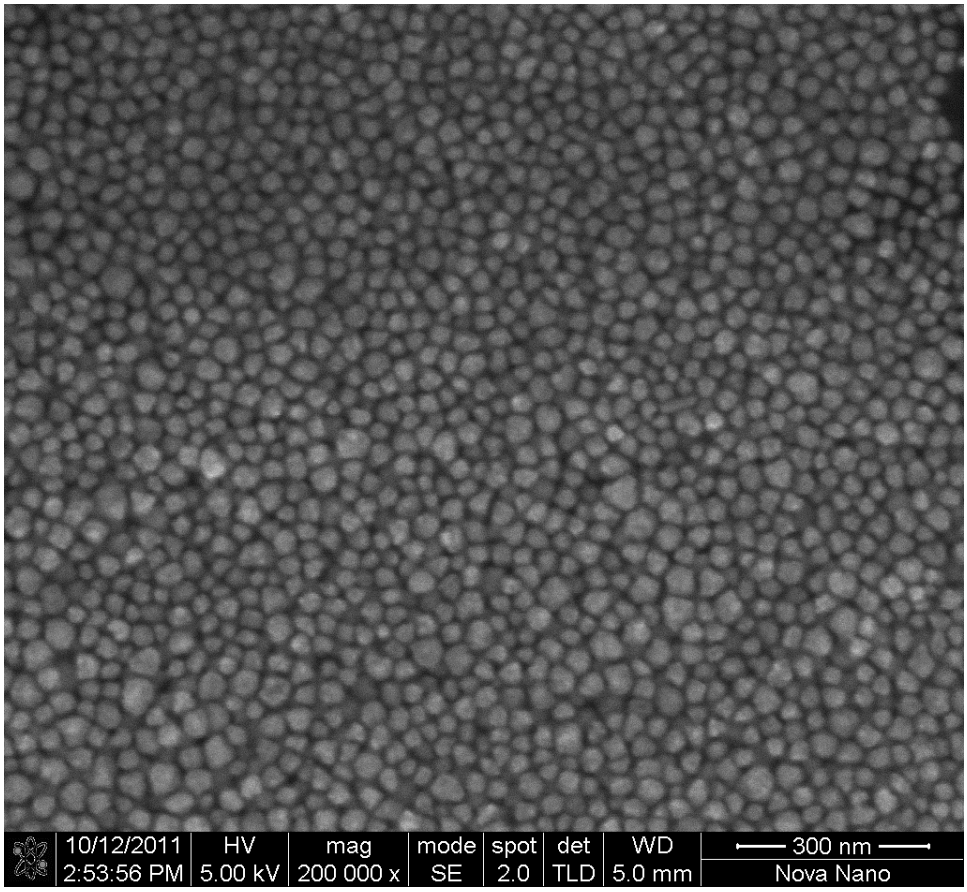
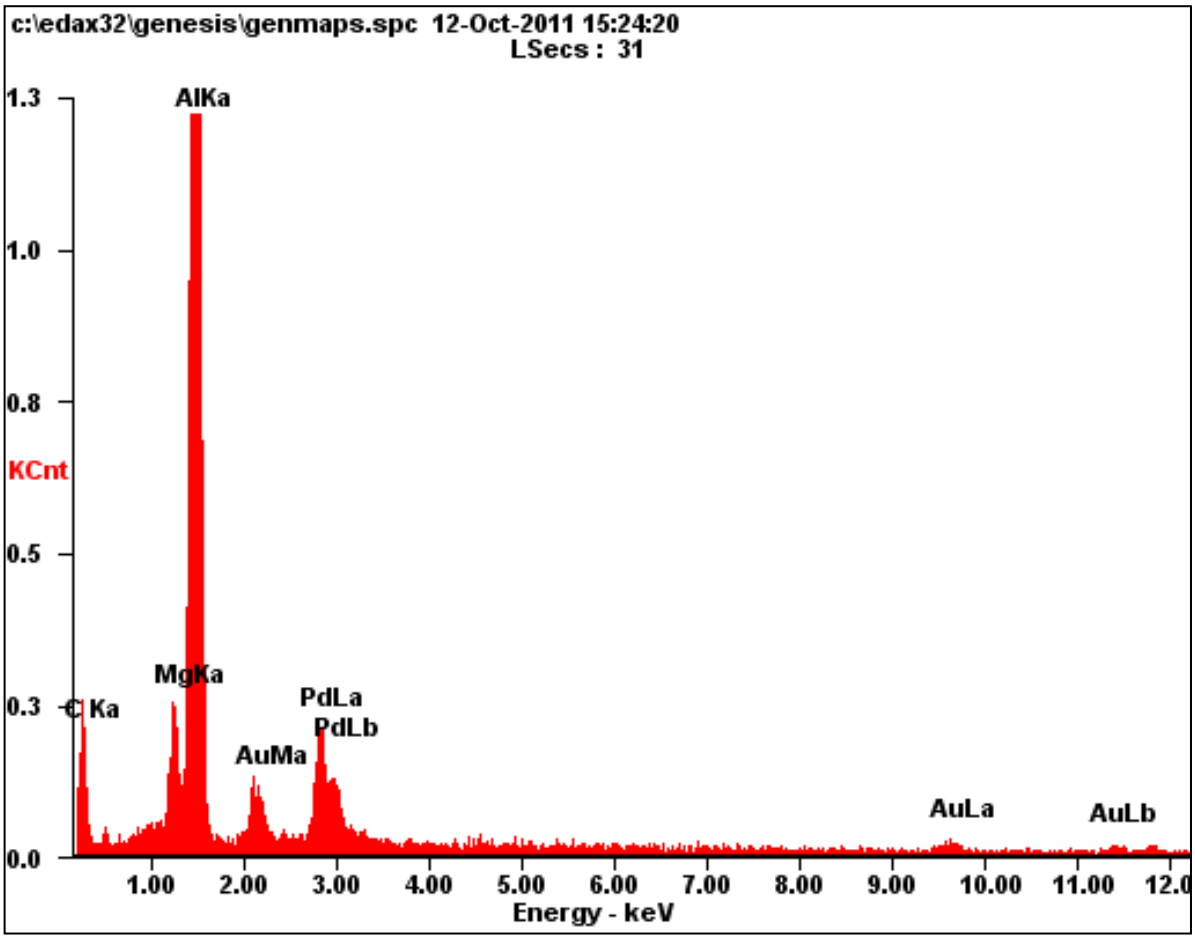


Fig. S18 SEM images of hollow Au@Pd core-shell NPs.



Element	*Wt%*	*At%*
CK	32.66	56.93
MgK	03.17	02.73
AlK	48.85	37.90
PdL	09.98	01.89
AuL	05.34	00.55
Matrix	Correction	ZAF

Fig. S19 (upper) EDX spectrum and (bottom) table of elemental ratio of hollow Au@Pd core-shell NPs.