Supporting Information for

Iodine Ions Mediated Formation of Monomorphic Single-Crystalline Platinum Nanoflowers

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Table S1. Models and fitting parameters of different samples taken from the quenched solutions at different stages of the synthesis process of Pt nanoflowers (5 mM H_2PtCl_6, 30 mM KI, 160 ^oC).

Time (min)	Shell	R (Å)	C. N.	$\Delta\sigma^2$	ΔE_0 (eV)	R-factor
0	Pt-I	2.66	5.27	0.00268	7.29	0.0126
0.3	Pt-I	2.61	3.16	0.00216	9.43	0.031
0.7	Pt-I	2.60	3.09	0.00219	8.06	0.00083
	Pt-Pt	2.81	1.47	0.00553	4.49	
1.7	Pt-I	2.60	2.76	0.00171	8.68	0.00152
	Pt-Pt	2.80	2.91	0.00595	2.21	
2	Pt-I	2.60	2.53	0.00234	6.29	0.00540
	Pt-Pt	2.81	3.61	0.00729	10.19	
2.5	Pt-I	2.60	2.26	0.00241	6.23	0.00576
	Pt-Pt	2.79	4.35	0.00525	9.27	
3	Pt-I	2.60	1.81	0.00250	7.07	0.00740
	Pt-Pt	2.78	5.22	0.00470	8.50	
3.5	Pt-I	2.63	1.20	0.00163	9.76	0.00690
	Pt-Pt	2.78	5.61	0.00416	7.70	
4	Pt-I	2.64	1.06	0.00290	11.30	0.00494
	Pt-Pt	2.77	6.05	0.00394	7.31	
4.5	Pt-I	2.61	0.77	0.00113	6.75	0.0119
	Pt-Pt	2.77	7.75	0.00540	8.01	
5	Pt-I	2.61	0.34	0.00491	7.34	0.00677
	Pt-Pt	2.76	8.92	0.00042	8.07	
6	Pt-Pt	2.77	9.46	0.00492	8.01	0.00580
7	Pt-Pt	2.77	10.26	0.00471	8.10	0.01161
8	Pt-Pt	2.76	10.76	0.00466	8.68	0.00429
9	Pt-Pt	2.76	10.87	0.00491	7.38	0.00399
10	Pt-Pt	2.76	10.96	0.00479	8.40	0.00657
13	Pt-Pt	2.77	11.00	0.00497	8.71	0.00666

R, distance between absorber and backscatter atoms; C. N., coordination number; $\Delta\sigma^2$, change in the Debye–Waller factor value relative to the Debye–Waller factor of the reference compound; ΔE_0, inner potential correction accounting for the difference in the inner potential between the sample and the reference compound. Error bounds (accuracies) characterizing the structural parameters obtained by EXAFS spectroscopy are estimated to be as follows: C. N., ±20%; R, ±1%; $\Delta\sigma^2$, ±20%; and ΔE_0, ±20%. R-factor is always used when you are comparing different models or the quality of the fit is actually in question. Better you fitting the curve, smaller R-factor value you'll get it. Generally, an acceptable R-factor should be smaller than 5%.

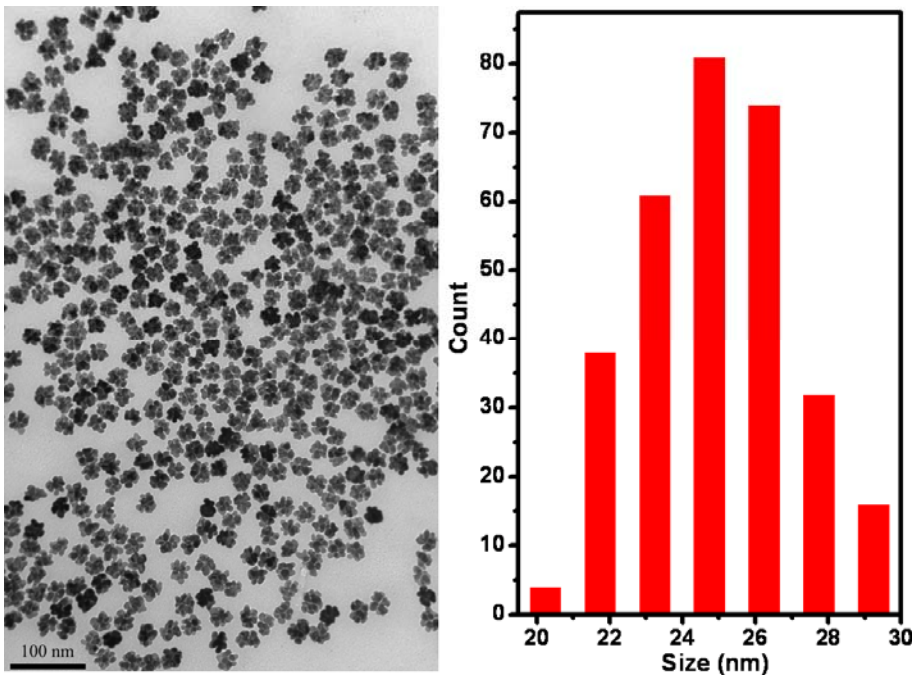

Figure S1. TEM image and size distribution of Pt nanoflowers in Figure 1

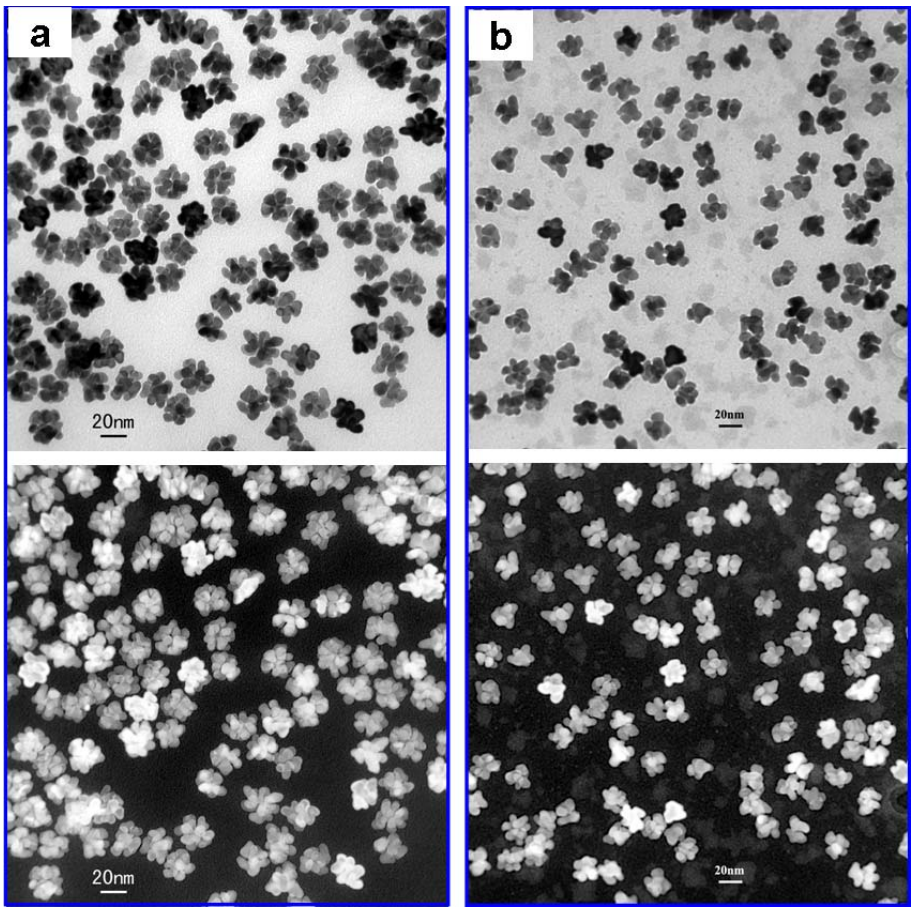

Figure S2. TEM images of Pt nanoflowers synthesized at 5 mM H_2PtCl_6, 160 ^oC, $R_{Pt/I}$ = 1:6 with different methods of H_2PtCl_6 addition. (a) Hot-Injection (b) Heat-Up

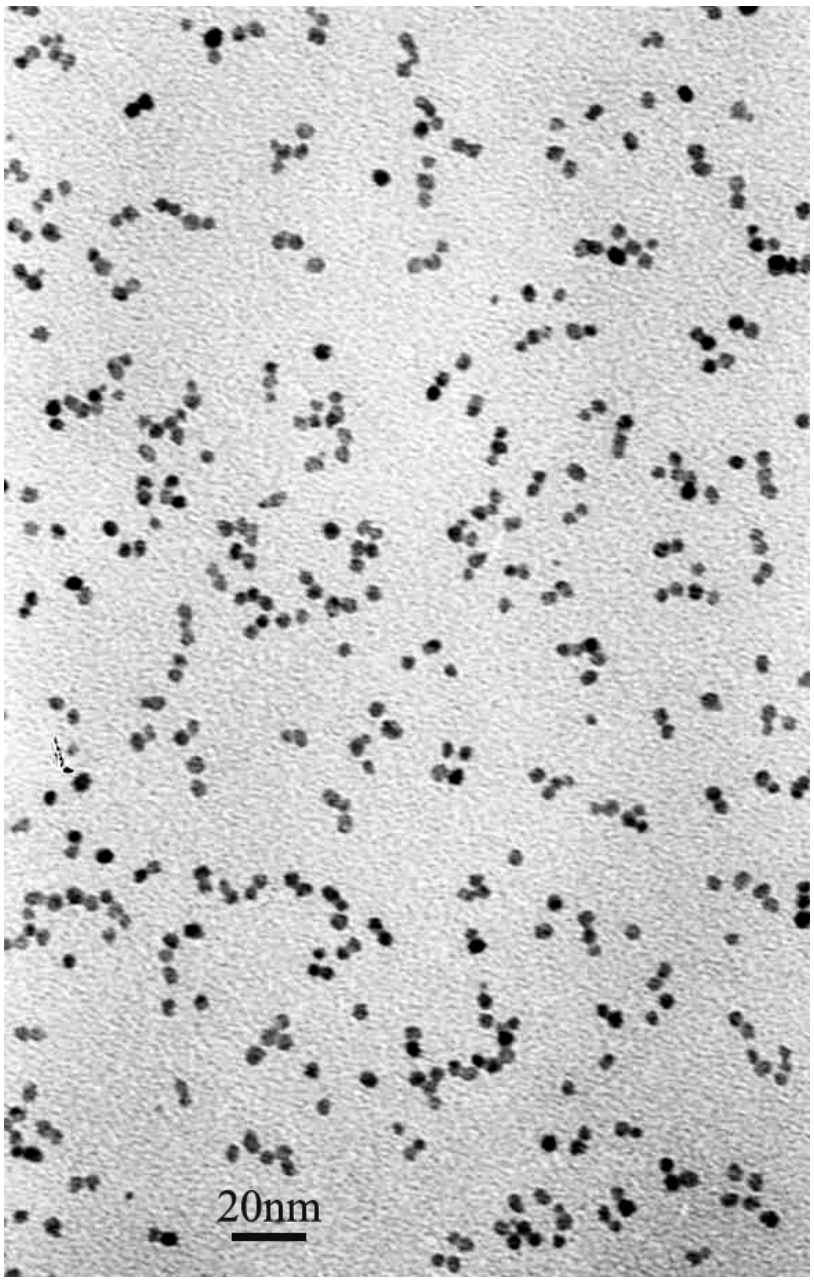

Figure S3. TEM image of Pt nanoparticles synthesized at 160 ^{o}C, 5 mM H_2PtCl_6 without any additives

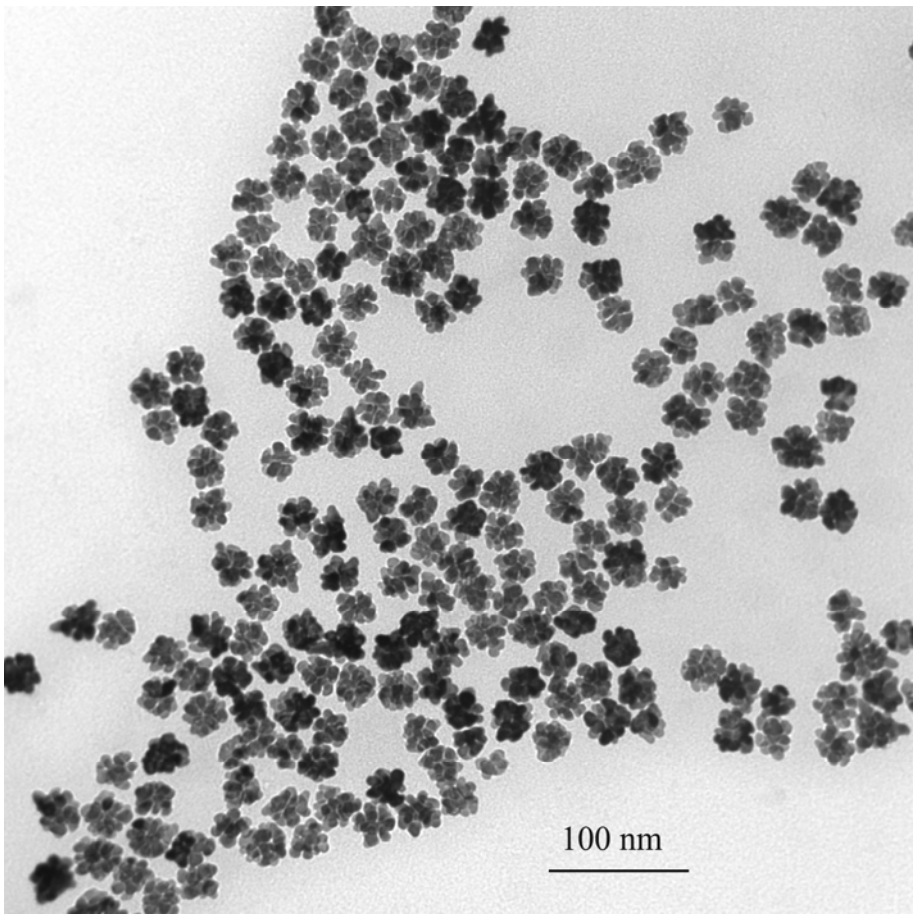

Figure S4. TEM image of Pt nanoflowers synthesized at 160 ^{o}C, 5 mM H_2PtCl_6, $R_{Pt/I}$ = 1:10

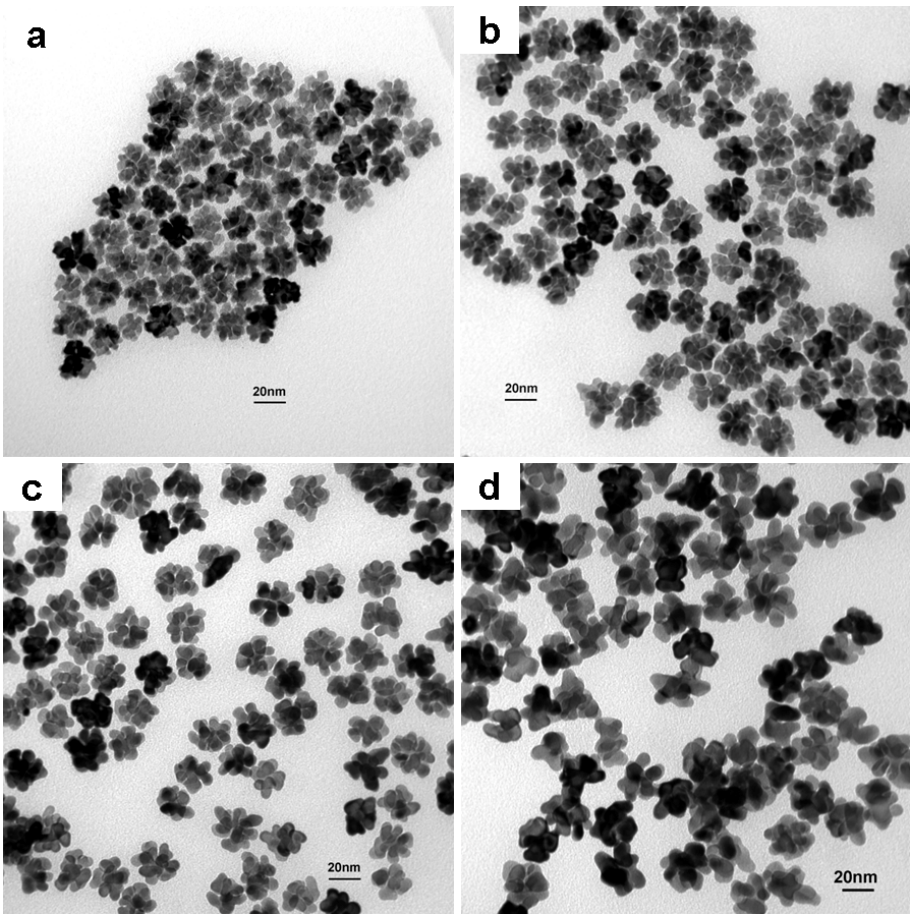

Figure S5. TEM images of the Pt nanostructures synthesized with 5 mM H_2PtCl_6 and $R_{Pt/I}$ = 1:6 at different temperatures (a) 120 ^oC (b) 140 ^oC (c) 160 ^oC (d) 180 ^oC

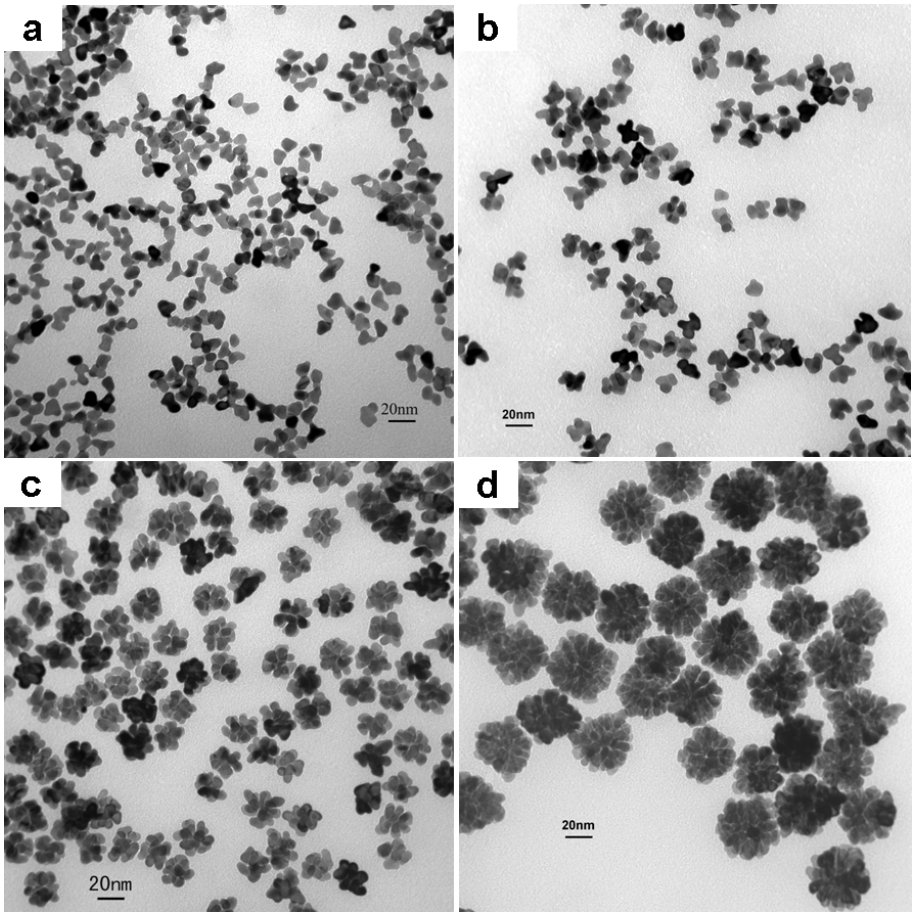

Figure S6. TEM images of the Pt nanostructures synthesized at 160 ^{o}C, $R_{Pt/I}$ = 1:6 with different H_2PtCl_6 concentrations. (a) 1 mM, (b) 2.5 mM, (c) 5 mM, (d) 10 mM.

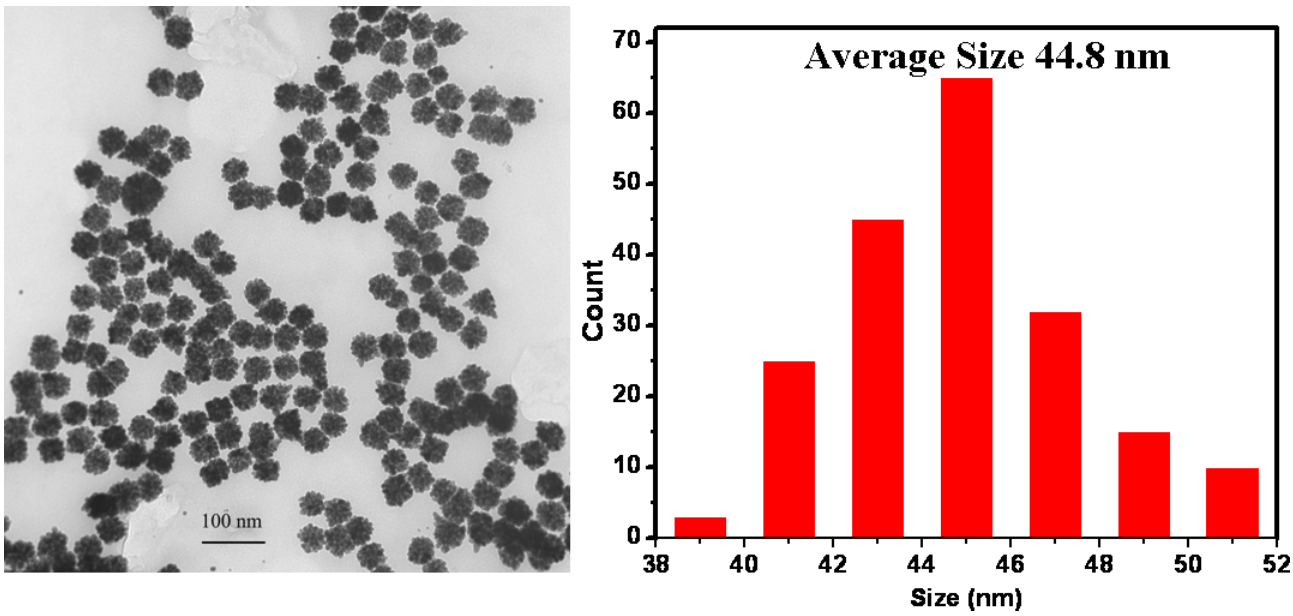

Figure S7. TEM image and size distribution of Pt nanoflowers in Figure 5d

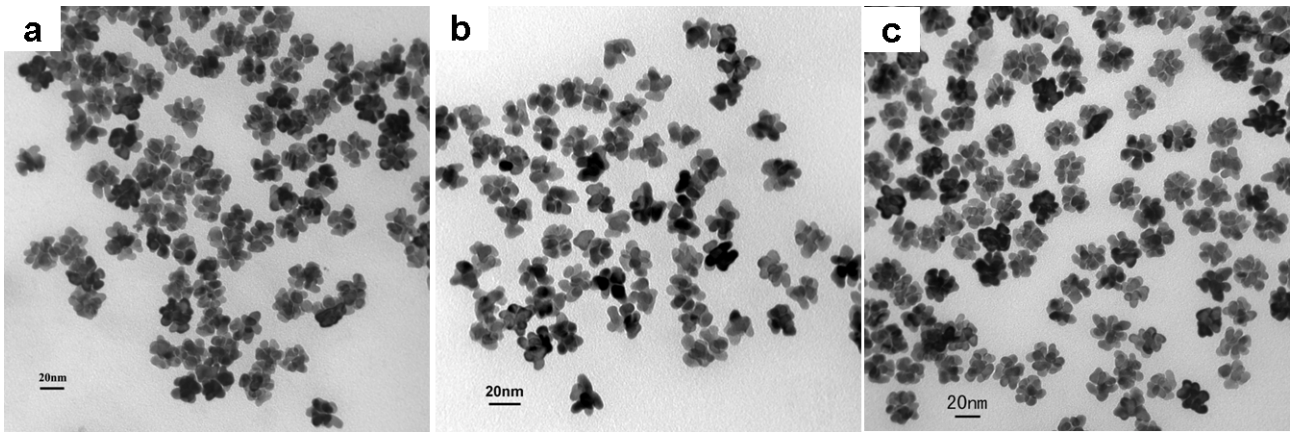

Figure S8. TEM images of Pt nanoflowers synthesized at 5 mM H_2PtCl_6, 160 ^oC, $R_{Pt/I}$ = 1:6 with different PVP concentrations. (a) 10 mM, (b) 20 mM, (c) 50 mM

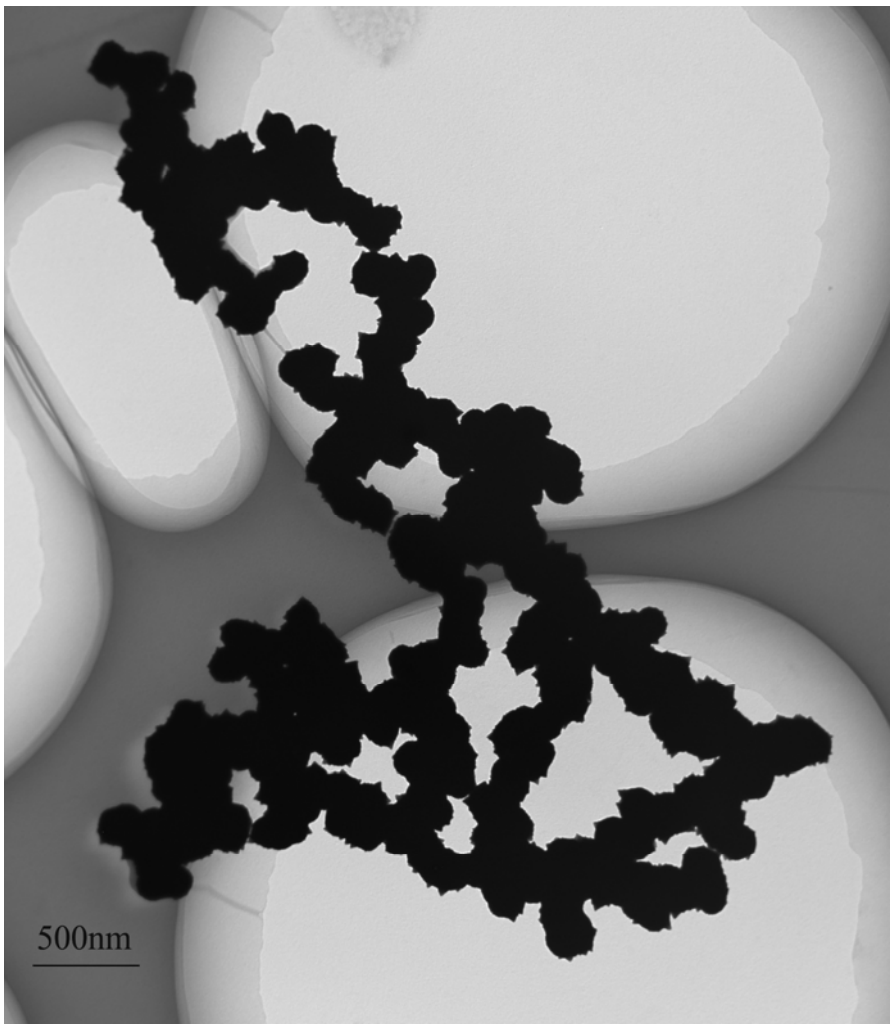

Figure S9. TEM image of Pt nanostructures synthesized at 5 mM H_2PtCl_6, 160 ^oC, $R_{Pt/I}$ = 1:6 without PVP

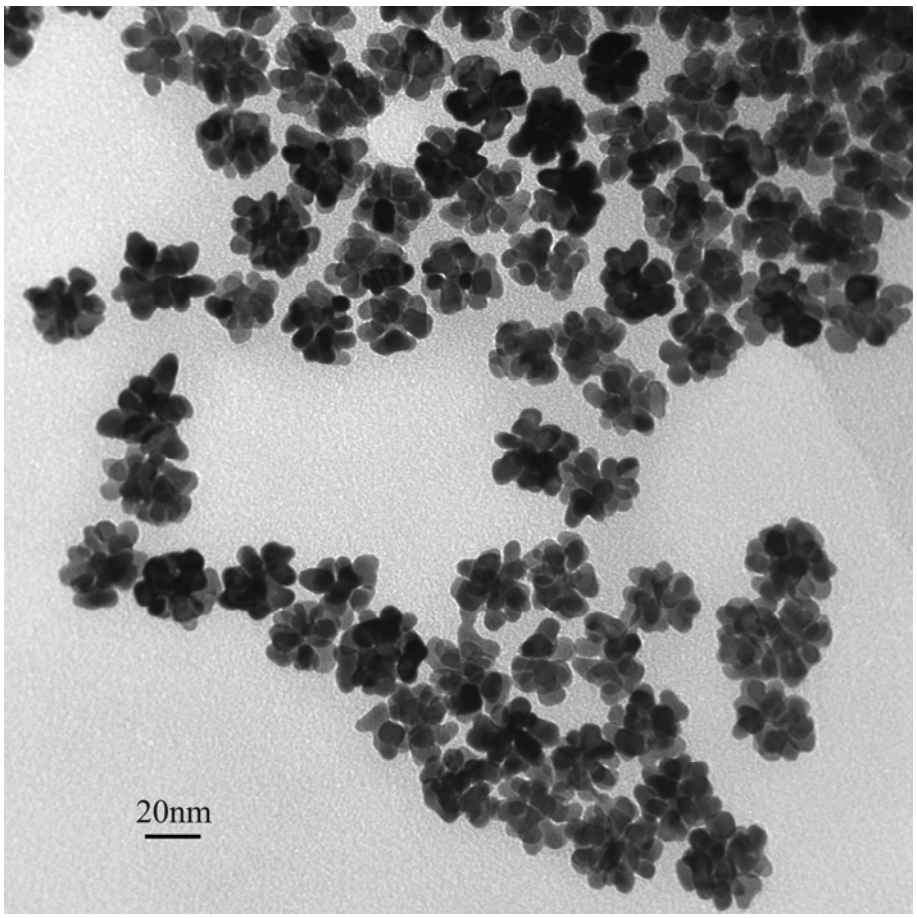

Figure S10. TEM image of Pt nanostructures synthesized at 5 mM H_2PtCl_6, 160 ^oC, $R_{Pt/I}$ = 1:6 in Ar atmosphere

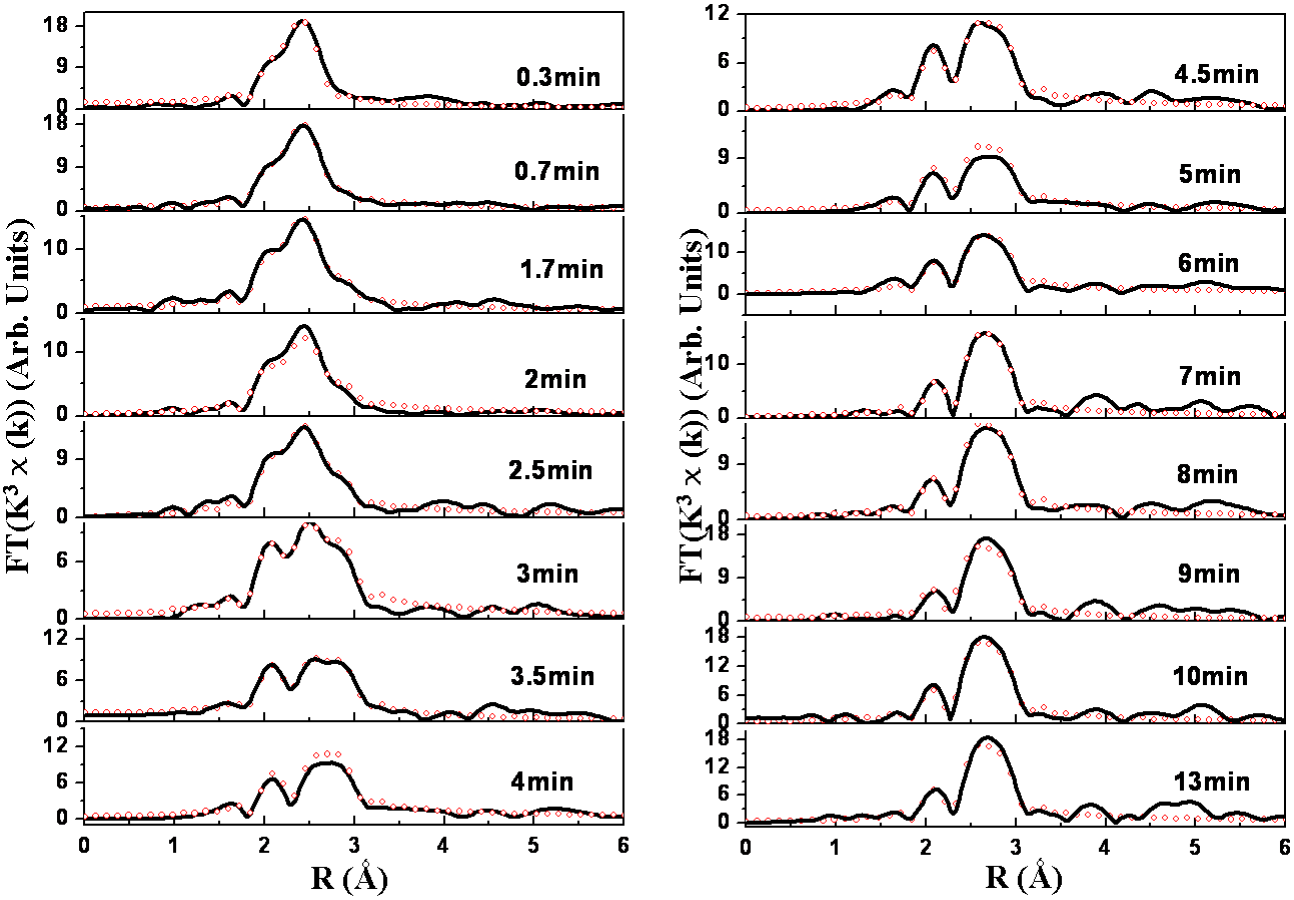

Figure S11. Fourier-transformed EXAFS data of these samples taken from the quenched solutions at different stages of the synthesis process of Pt nanoflowers (5 mM H_2PtCl_6, 30 mM KI, 160 ^oC). Fitting results are inserted

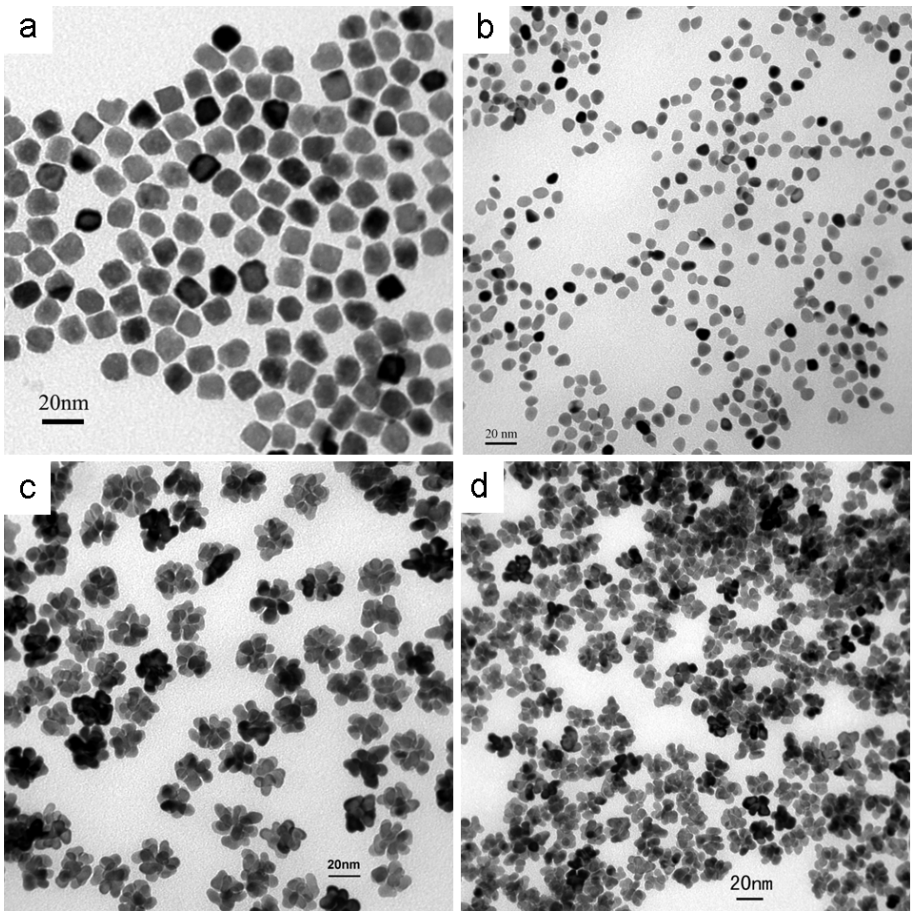

Figure S12. TEM images of Pt nanostructures synthesized with different Pt precursors at 160 ^{o}C, 5 mM Pt precursors, $R_{Pt/I}$ = 1:6 (a) $Pt(acac)_2$, KI (b) K_2PtCl_4, KI (c) H_2PtCl_6, KI (d) K_2PtI_6.