

Highly Stable Au Nanoparticles with Double Hydrophilic Block Copolymer Templatation: Correlation between Structure and Stability

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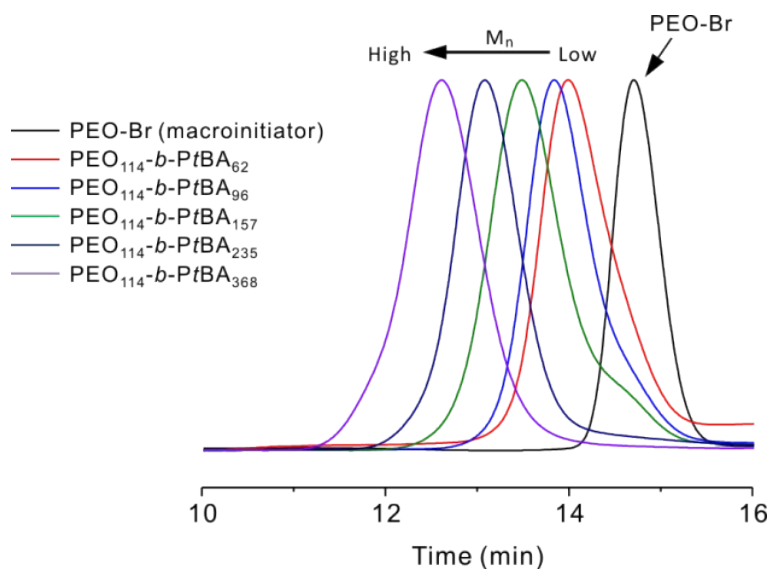


Figure S1. SEC traces of PEO macroinitiator and PEO-*b*-PtBA copolymers under GPC analysis in chloroform. The molecular weight and molecular weight distribution was determined by using PMMA as a standard.

Table S1. Characterization of micelles and Au NPs modified by the PEO_{5k}-*b*-PAA_{7k} copolymer.

R^a	0.5	1.0	1.5	2.0	3.0	4.0
D_h (nm) ^b	56.6	75.7	100.6	101.1	112.4	97.5
D_{NP} (nm) ^c	44.7 ± 11.7	37.6 ± 15.3	25.9 ± 8.7	21.3 ± 8.1	16.7 ± 3.3	17.8 ± 2.3

^aThe ratio of acrylic acid (AA) in the copolymer to Au precursor is denoted as R . ^bAveraged size of micelles is denoted as D_h , which was evaluated from the three measurements by DLS. ^cDiameter of Au NP is denoted as D_{NP} , which was calculated by analyzing more than 100 Au NPs observed in TEM images.

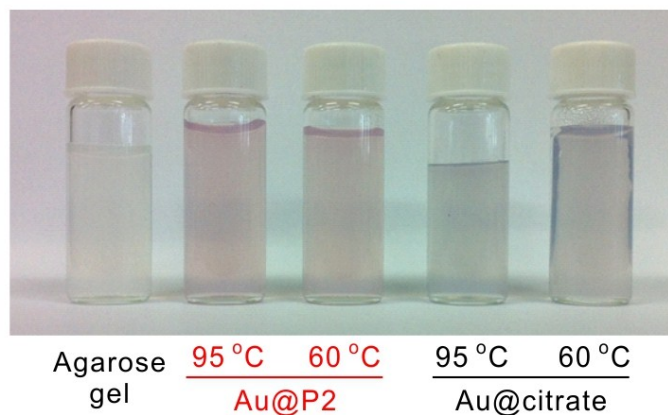


Figure S2. Thermal dispersibility of Au@P2 and Au@citrate NPs in agarose gel matrix. The particle concentration of Au NPs in each gel was fixed to 0.10 nM.

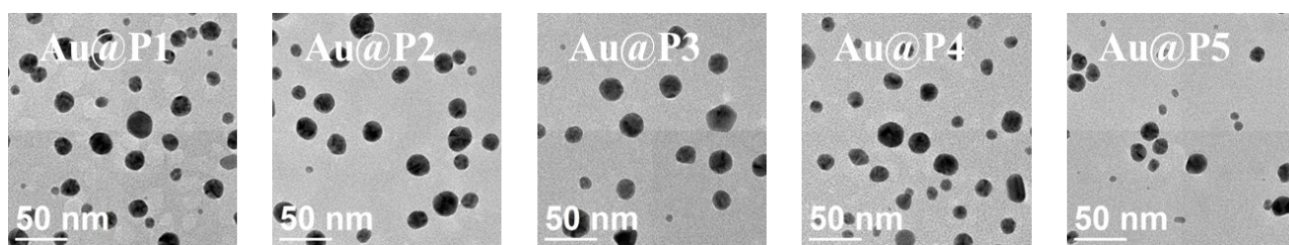
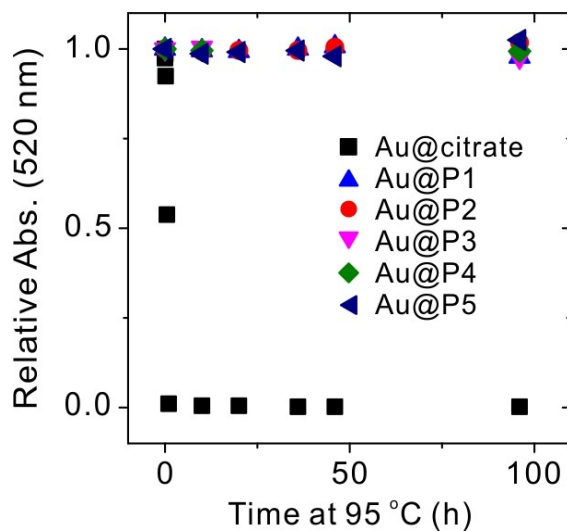


Figure S3. TEM images of a series of Au@DHBC NPs prepared at $R = 3$.

Table S2. Theoretical and yield of Au and DHBC.

Entry	Composition	M_n , NMR, (PEO- <i>b</i> -PAA)	Theoretical mass ^a		Au yield		DHBC yield	
			Au (mg)	DHBC (mg)	Mass (mg)	Mass (%)	Mass (mg)	Mass (%)
Au@P1	PEO _{5k} - <i>b</i> -PAA _{5k}	9600	13.2	30.5	12.3	93.3	29.8	97.8
Au@P2	PEO _{5k} - <i>b</i> -PAA _{7k}	12100	13.2	24.8	12.3	93.3	19.5	78.7
Au@P3	PEO _{5k} - <i>b</i> -PAA _{11k}	16500	13.2	20.8	12.0	91.2	16.1	77.2
Au@P4	PEO _{5k} - <i>b</i> -PAA _{17k}	22100	13.2	18.7	12.0	91.2	15.0	80.3
Au@P5	PEO _{5k} - <i>b</i> -PAA _{27k}	31700	13.2	17.1	11.8	89.4	13.6	79.4

^a The theoretical mass of Au and DHBC equals the value used in the synthesis of NP. ^b The yield of Au NPs was calculated by ICP-OES analysis. ^c The mass of DHBC = [The ratio of weight% of polymer to weight% of Au (based on the TGA analysis)] × [mass of Au].

**Figure S4.** Thermal stability of Au@citrate and Au@DHBC NPs at 95 °C.