ELECTRONIC SUPPLEMENTARY INFORMATION FOR

Block copolymer-regulated synthesis of gold nanocrystals with sharp tips and edges

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Figure S1: Molecular structure of Tetronic[®] copolymers: b = 17 and a = 15 for T904, and b = 20 and a = 60 for T1107.



Figure S2: a) Proportion of decahedra in the sample, b) Lateral size distribution of decahedra, c) Apex size distribution of decahedra.



Figure S3: XRD pattern of decahedral Au nanoparticles obtained via block copolymer (T904) reduction and stabilization.



Figure S4: TEM images of different samples prepared under the same condition than in Figure 1 except that the citric acid concentration was varied to a) 0; b) 10; c) 20; d) 45 and e) 70 mM.



Figure S5: TEM images of four samples prepared in the same conditions than those of Figure 1 except that in a) ascorbic acid replaced citric acid; b) the reaction was performed in the absence of $T904^{\circ}$; c) the reaction was performed in the presence of $T1107^{\circ}$; d) in b) PVP replaced T904[°].



Figure S6: TEM images of five samples prepared in the same conditions than those of Figure 3 except that the block copolymer concentration was varied to a) 0.5; b) 1; c) 2; d) 4 and e) 8 mM.

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Figure S7: a) Proportion of ultrasmall triangular plates in the sample; b) lateral size distribution of plates.



Figure S8: XRD pattern of the ultrasmall Au nanoplates.



Figure S9: TEM images of four samples prepared in the same conditions than those of Figure 3 except that the HCl concentration was varied to a) 0.5; b) 1; c) 2; and d) 5 mM.



Figure S10: TEM image of gold reduction under the same conditions shown in Figure 3 except that a) HCl was replaced by H_2SO_4 (3mM); b) HCl was replaced by NaCl (3 mM); and c) the reaction was developed under N_2 atmosphere.

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