Supplementary Information

Shape-, Size-, and Density-tunable Synthesis and Optical Property of

Copper Nanoparticles

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Figure S1. Size distribution of CuNPs synthesized from a 2 mM $CuSO_4$ -based electrolyte with 10 mM Na_3CA for 1000 s at (a) -0.26 V, (b) -0.29 V, (c) -0.32 V, (d) -0.35 V, (e) -0.38 V vs. Ag|AgCl.



Figure S2. Size distribution of CuNPs synthesized from a 2 mM $CuSO_4$ -based electrolyte with 5 mM Na_3CA for 1000 s at (a) -0.23 V, (b) -0.26 V, (c) -0.29 V, (d) -0.32 V, (e) -0.35 V vs. Ag|AgCl.



Figure S3. Size distribution of CuNPs synthesized from a 5 mM $CuSO_4$ -based electrolyte with 10 mM Na_3CA for 1000 s at (a) -0.20 V, (b) -0.23 V, (c) -0.26 V, (d) -0.29 V, (e) -0.32 V vs. Ag|AgCl.



Figure S4. Size distribution of CuNPs synthesized from a 2 mM $CuSO_4$ -based electrolyte with 10 mM Na_3CA at -0.32 V vs. Ag |AgCl for (a) 1000 s, (b) 2000 s, (c) 3000 s, (4) 4000 s.