Electronic supplementary information (ESI)

Pt-Cu nanoctahedra: synthesis and comparative study with nanocubes on their electrochemical catalytic performance

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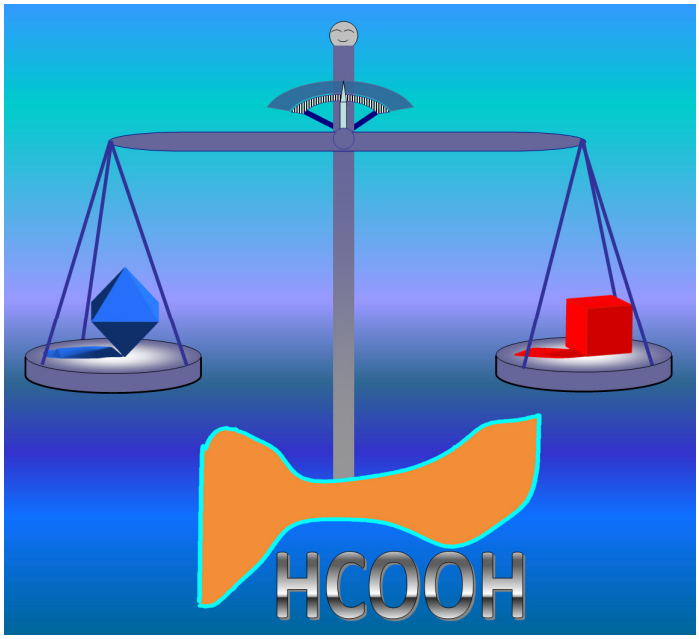


Figure S1. Typical TEM image of Pt-Cu nanoctahedron in a multilayer-assembly pattern.

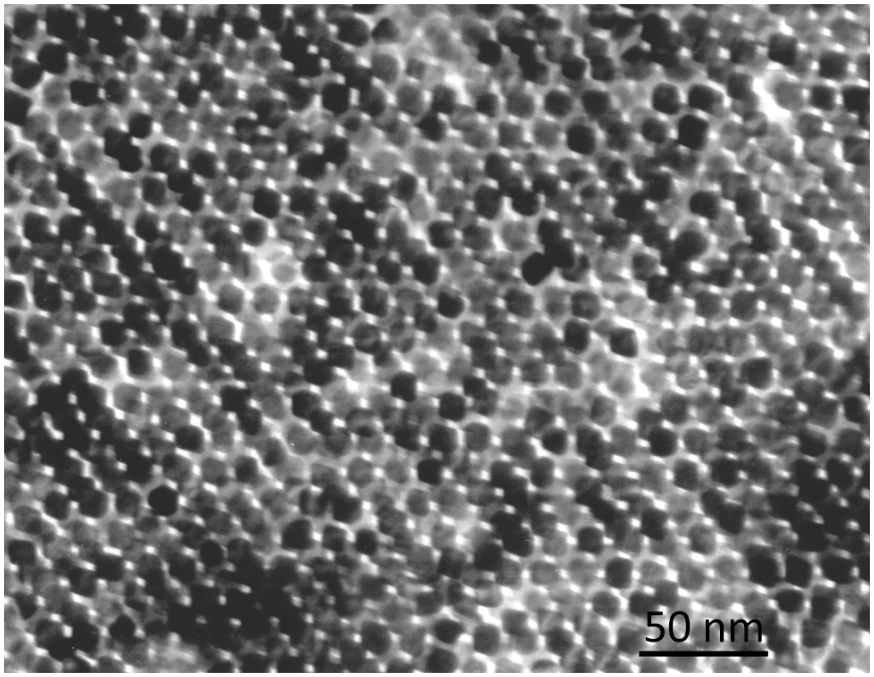
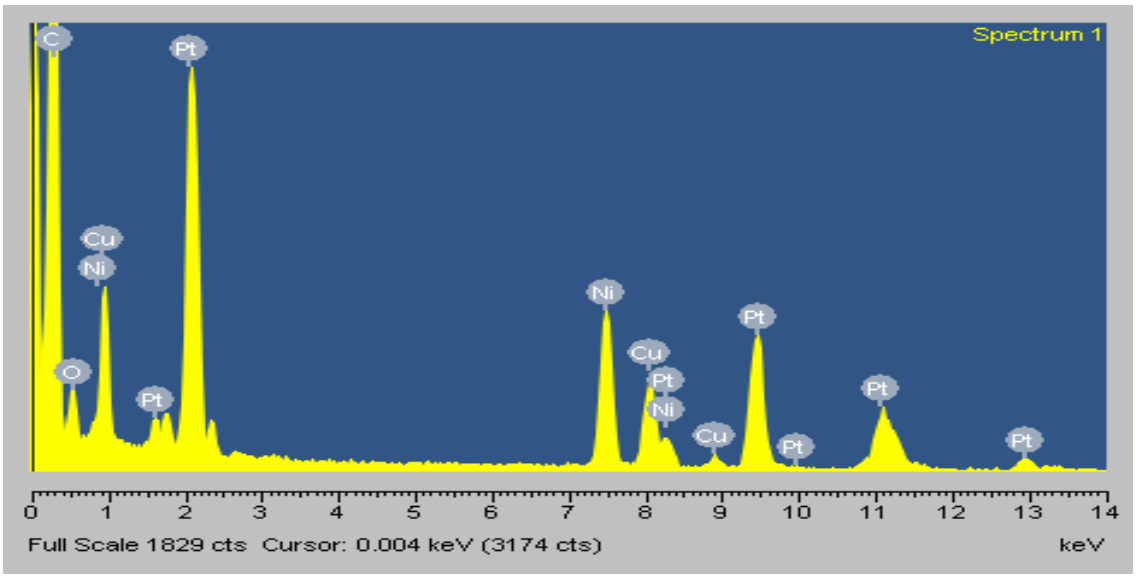
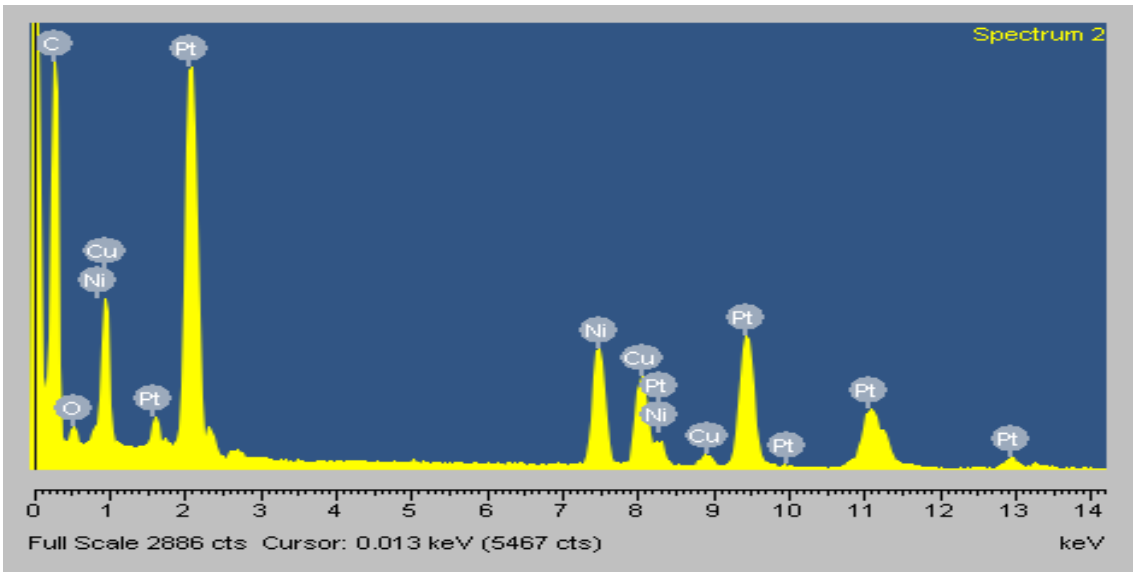
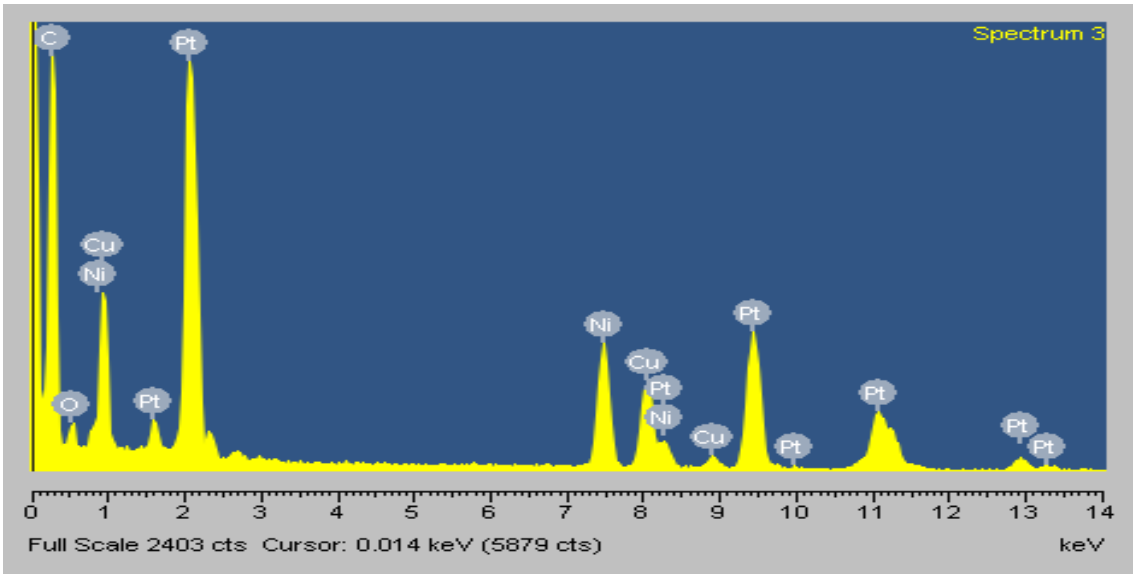
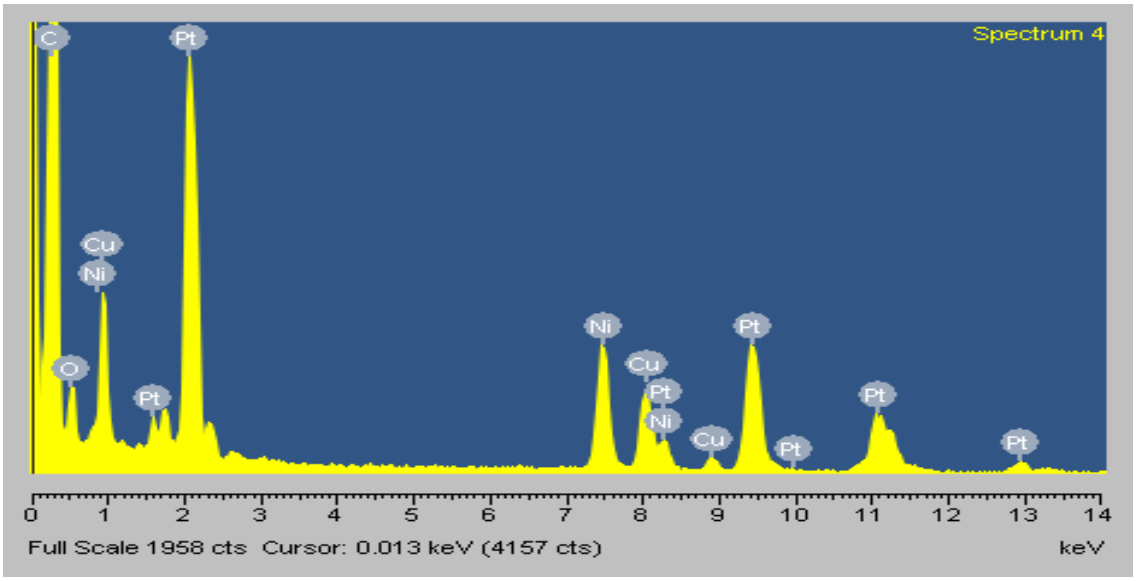


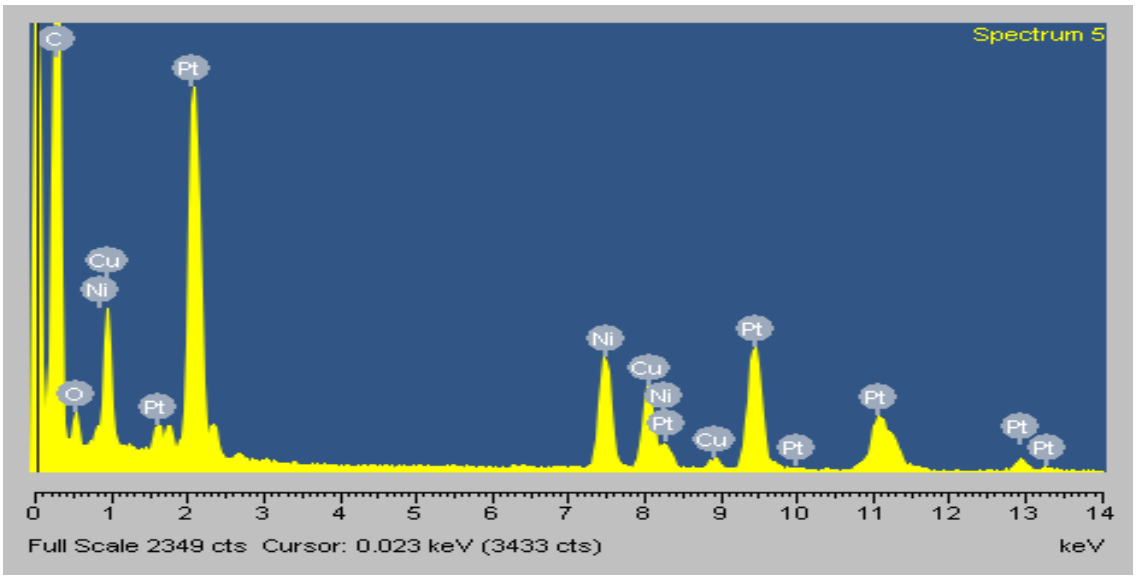
Figure S2. Typical EDS spectra of Pt-Cu nanoctahedra at different locations on a Ni-grid and their analysis results.

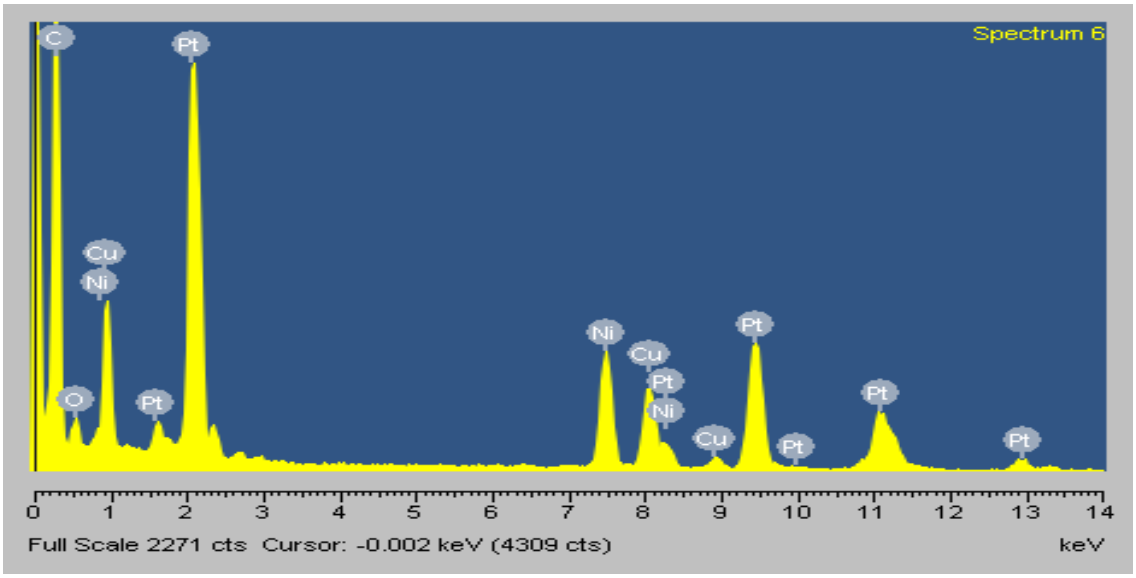












Processing option: All elements analyzed (Normalized)

All results in atomic%

Spectrum	In stats.	Cu	Pt
Spectrum 1	Yes	33.15	66.85
Spectrum 2	Yes	34.68	65.32
Spectrum 3	Yes	33.83	66.17
Spectrum 4	Yes	32.16	67.84
Spectrum 5	Yes	33.41	66.59
Spectrum 6	Yes	32.80	67.20
Mean		33.34	66.66
Std. deviation		0.87	0.87
Max.		34.68	67.84
Min.		32.16	65.32

Figure S3. TEM image of Pt-Cu spherical nanoparticles prepared using Cu(II)$(acac)_2$ as the Cu-source under otherwise identical conditions for Pt-Cu nanoctahedron synthesis..

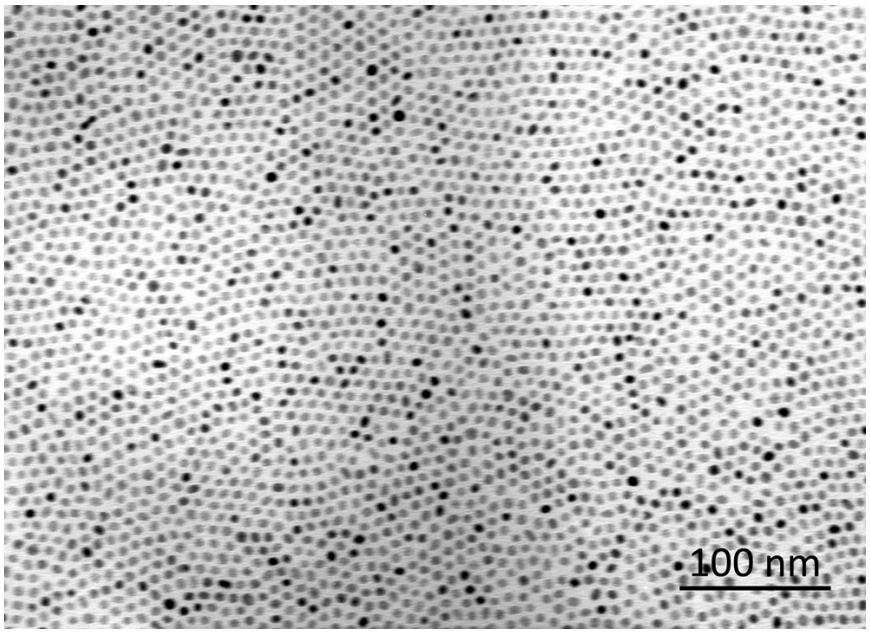


Figure S4. TEM images of Pt-Cu nanoparticles for tuning the particle morphology as a function of input Cu^{2+}/Cu^{+} molar ratio while other synthesis conditions were kept the same: (a), 8:1; (b), 6:1; (c), 5:1; (d), 4:1; (e), 1:1; (f), 1:6; (g), 1:10; (h), 0:1. Data bar: 100 nm.

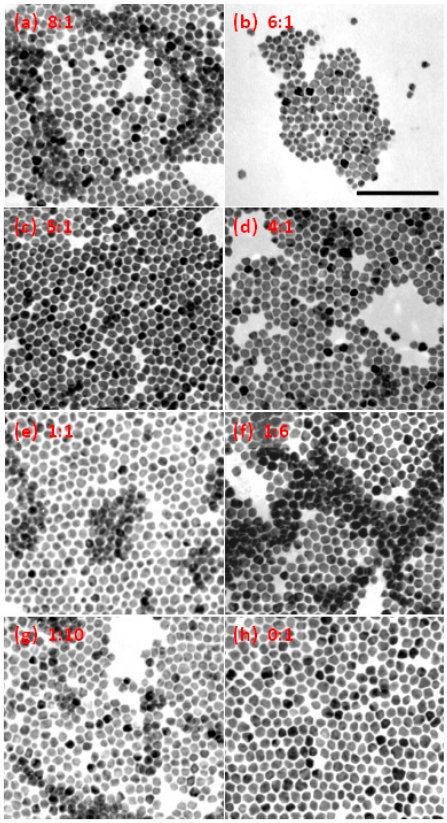


Figure S5. TEM image of Pt-Cu nanocrystals prepared using oleylamine as the reaction solvent without oleic acid, while the other conditions were same as those of typical Pt-Cu nanooctahedron synthesis.

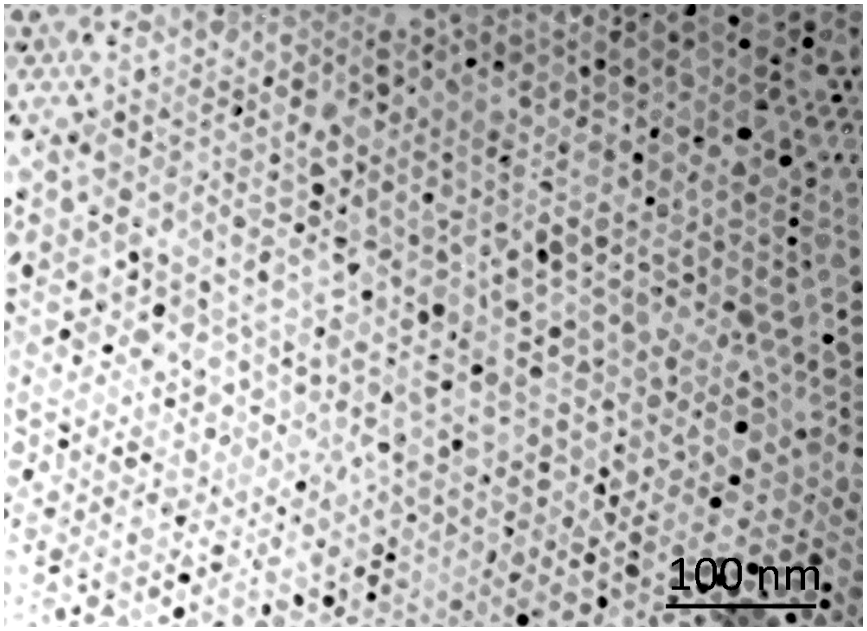


Figure S6. TEM image of $Pt_{60}Cu_{40}$ nanocubes used for electrochemical study.

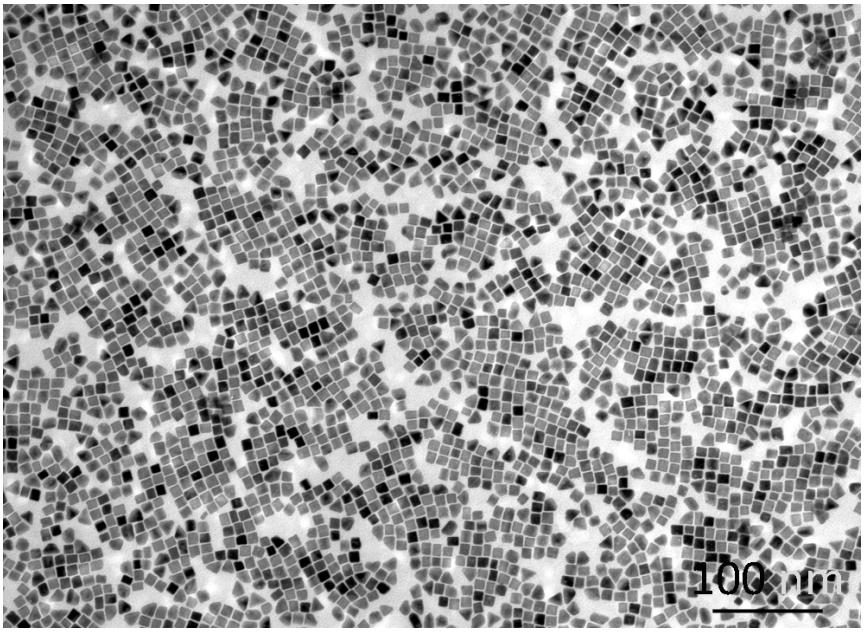


Figure S7. TEM image of the Pt-Cu nanoctahedra after an electrochemical measurement.