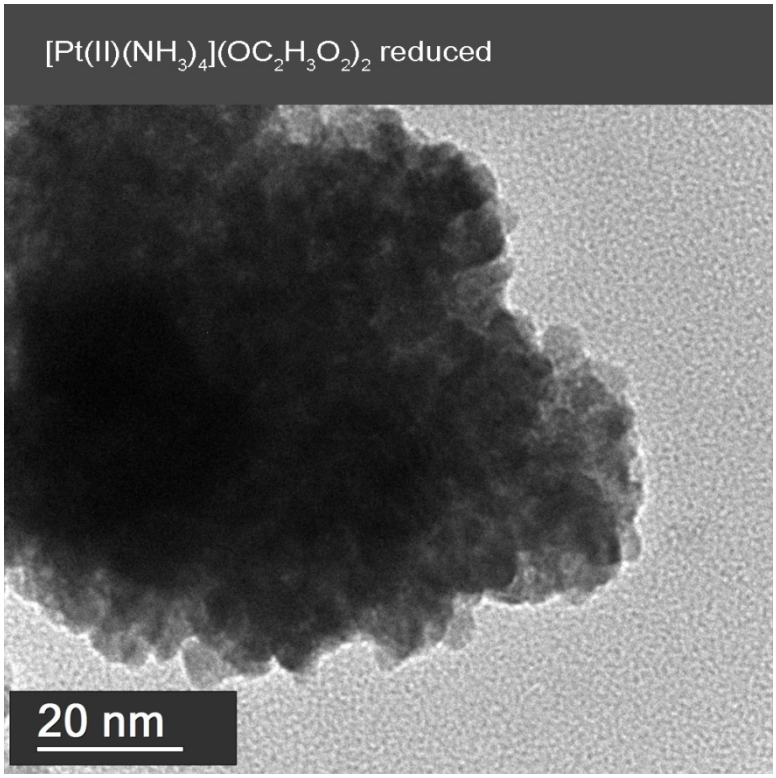
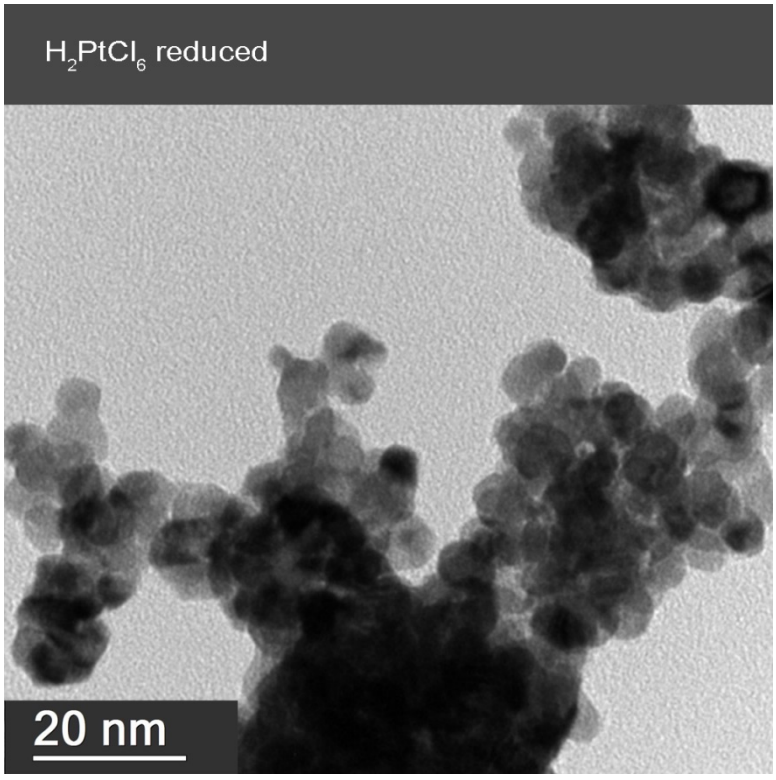
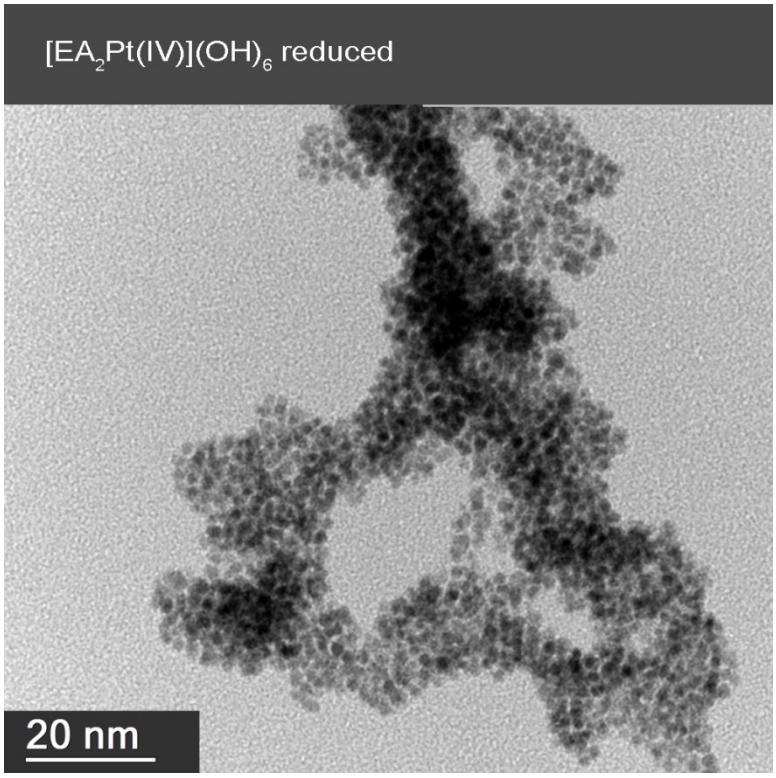
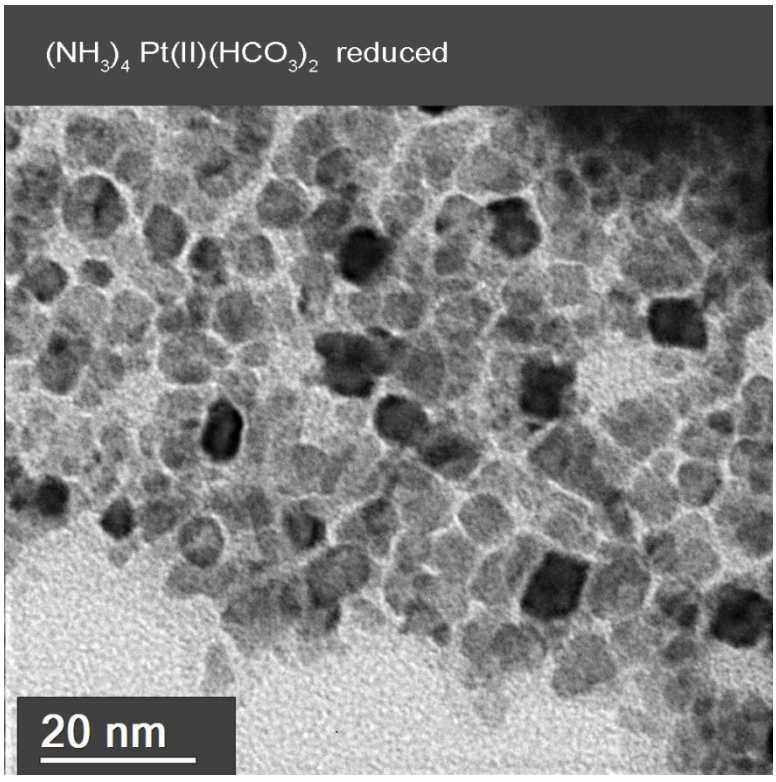
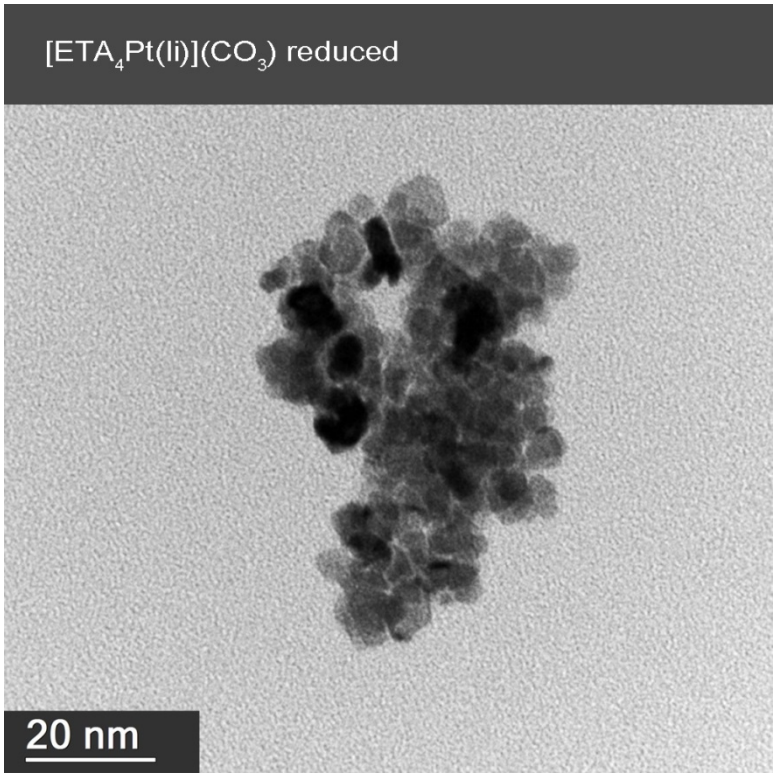
Electronic Supplementary Material (ESI) for Nanoscale.

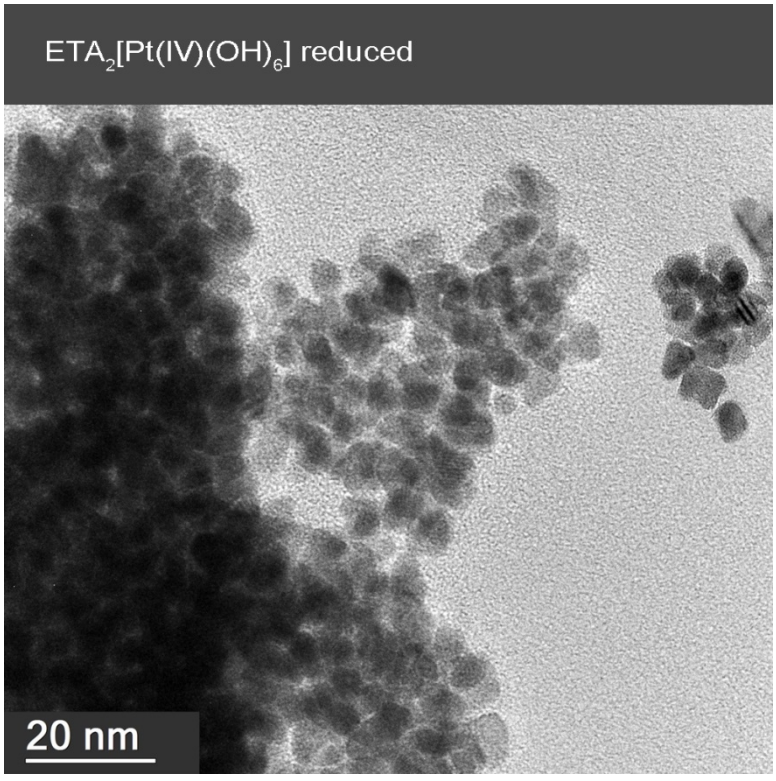


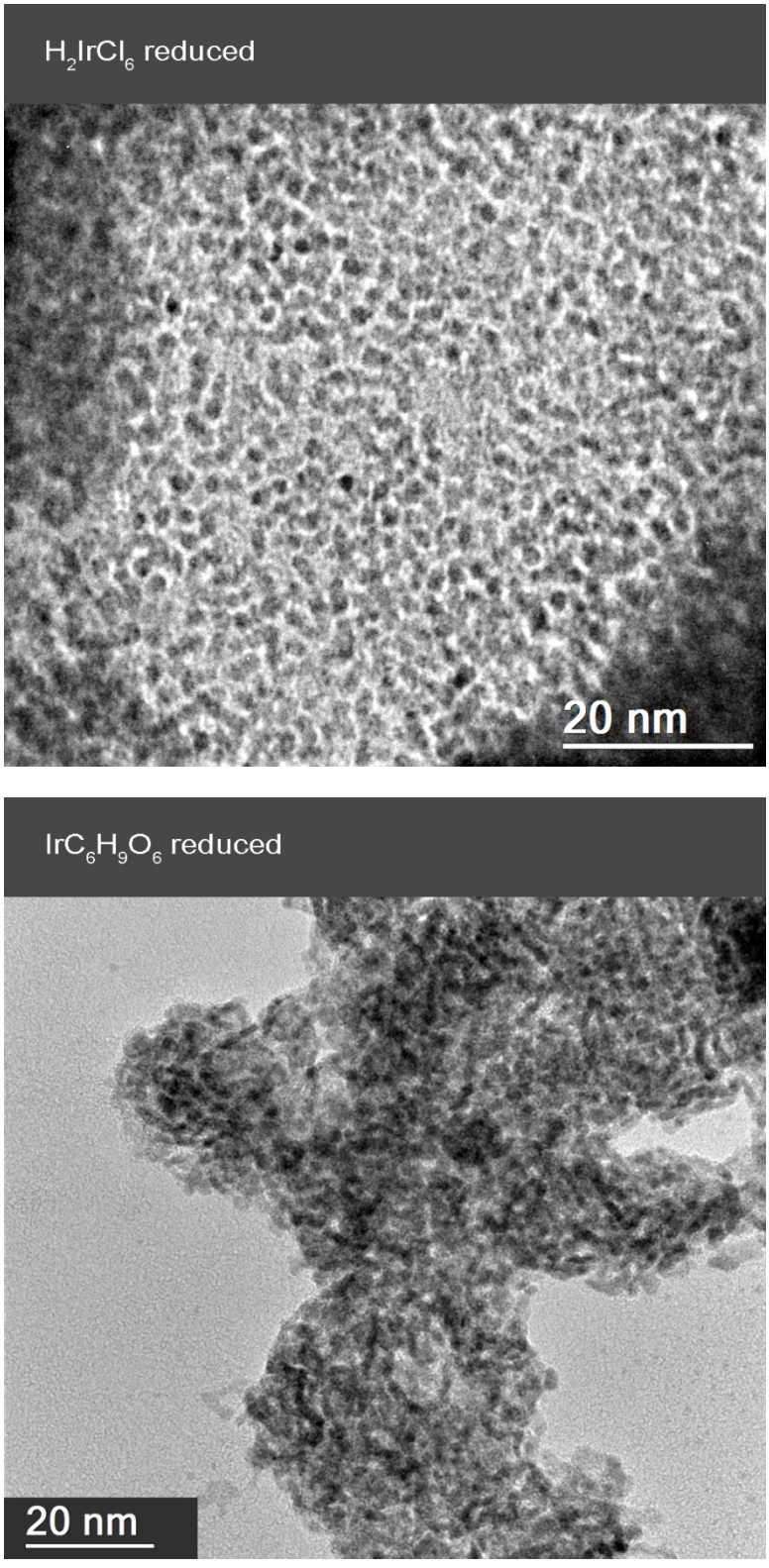



[EA2Pt(IV)](OH)6 reduced
20 nm

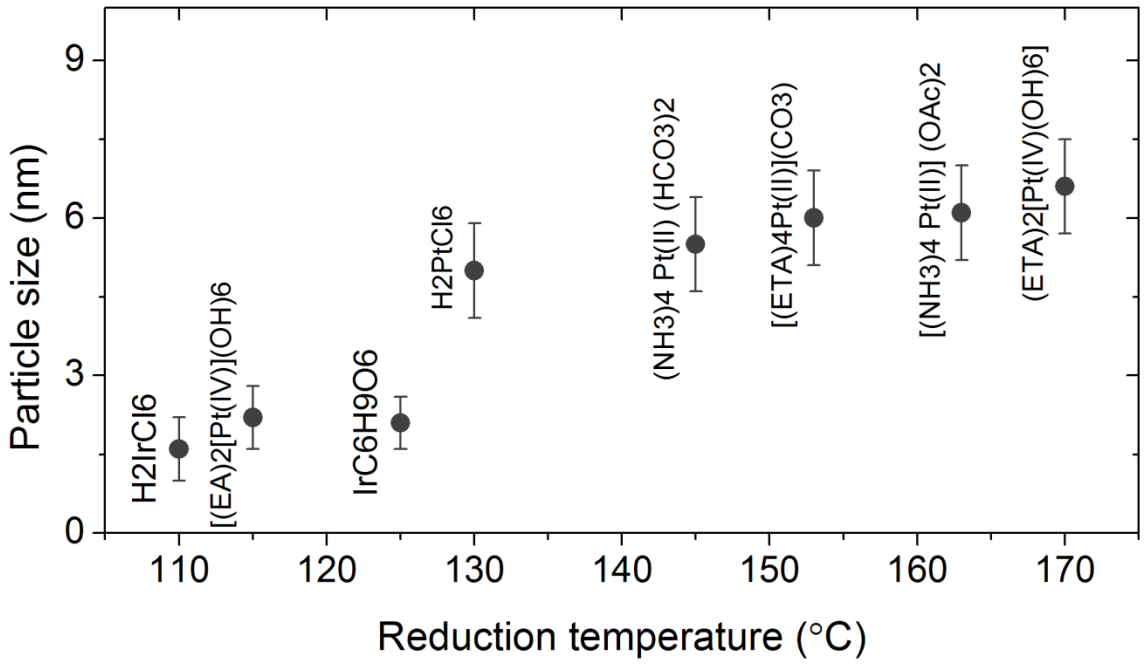

(NH3)4 Pt(II)(HCO3)2 reduced
20 nm


[ETA4Pt(Ii)](CO3) reduced
20 nm

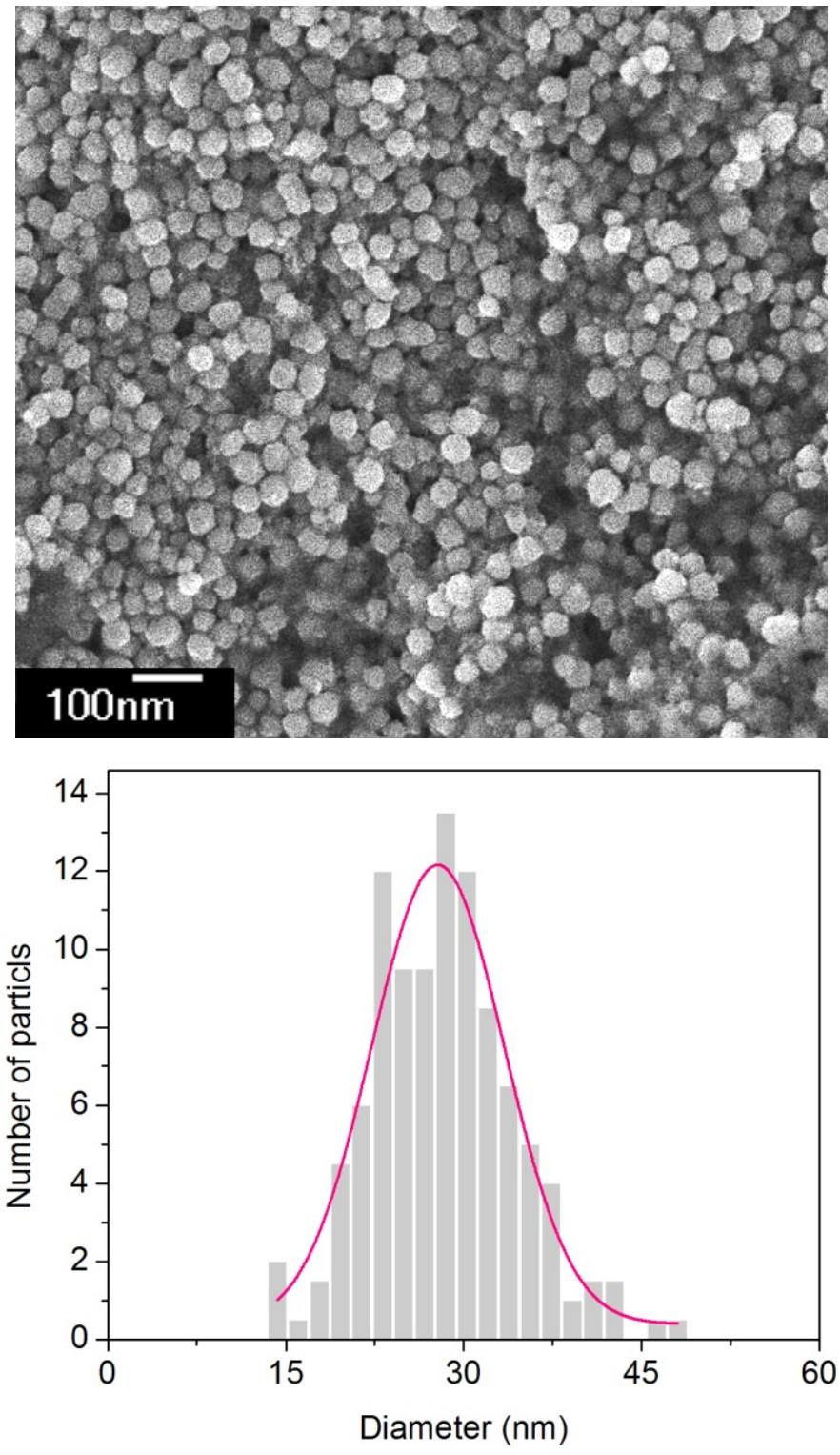

ETA2[Pt(IV)(OH)6] reduced
20 nm



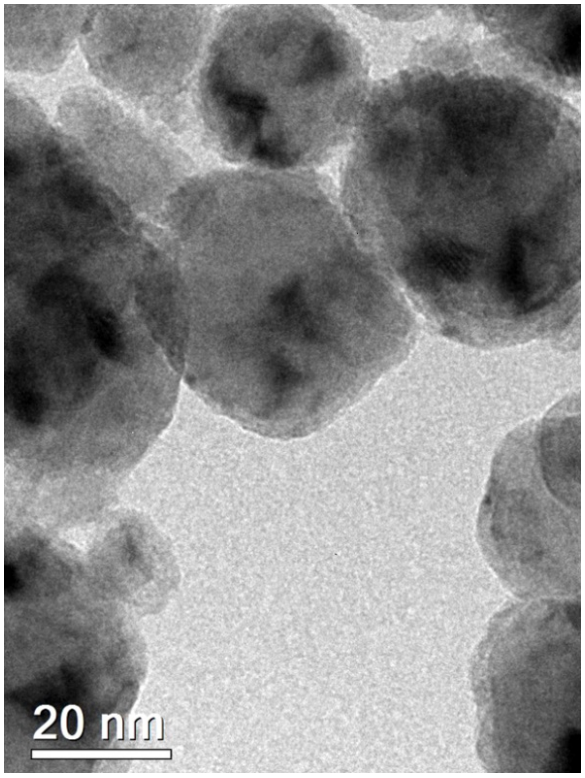
Supplementary Figure 1. Pt and Ir seeds prepared by polyol reduction method. Some particles are strongly aggregated

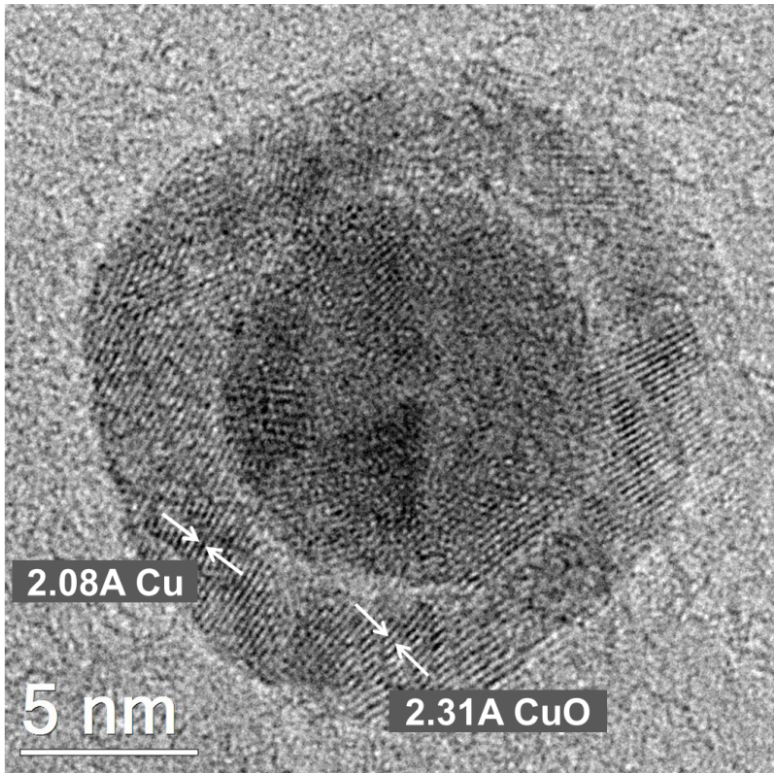


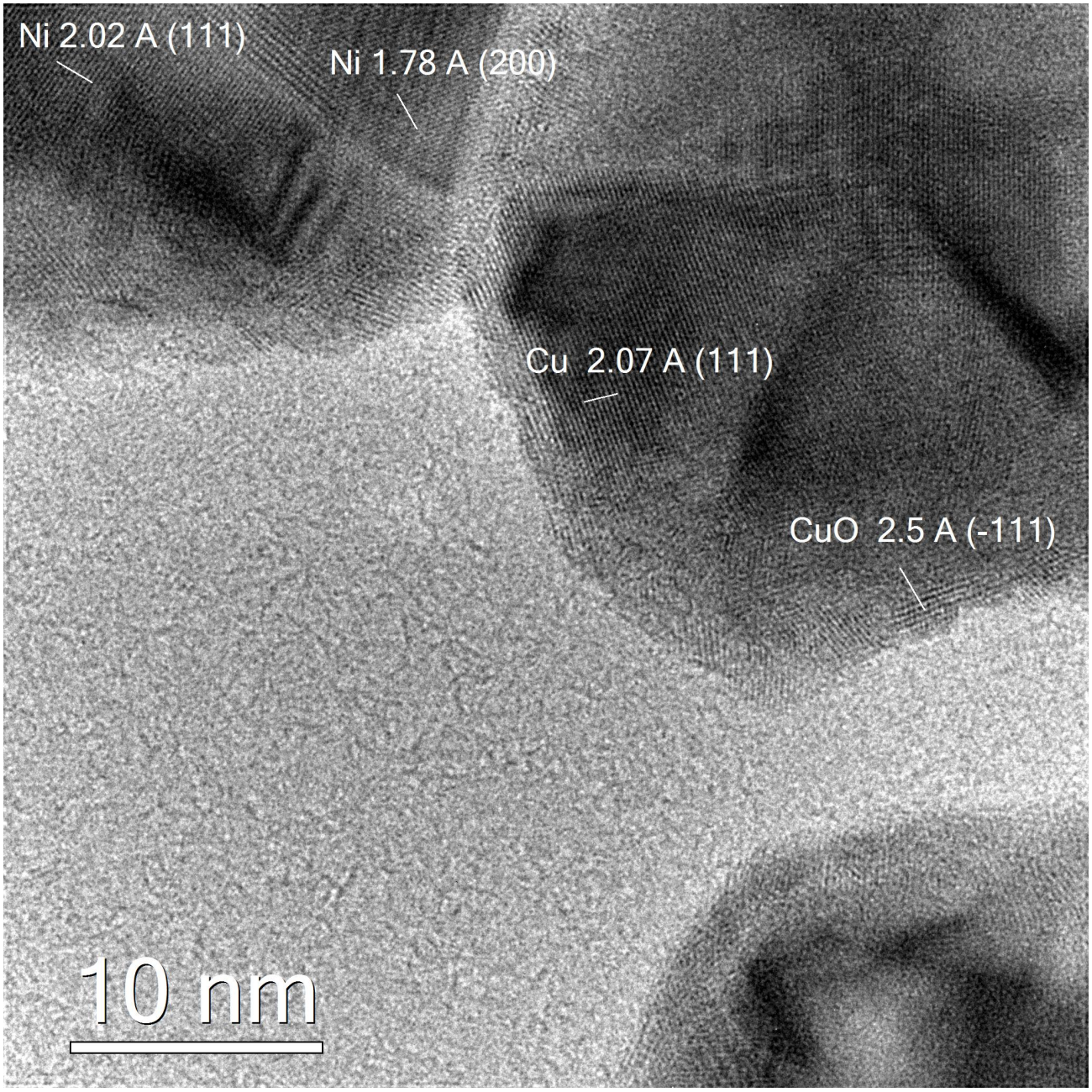
Supplementary Figure 2. The size chart of the Pt and Ir seeds prepared by polyol reduction method

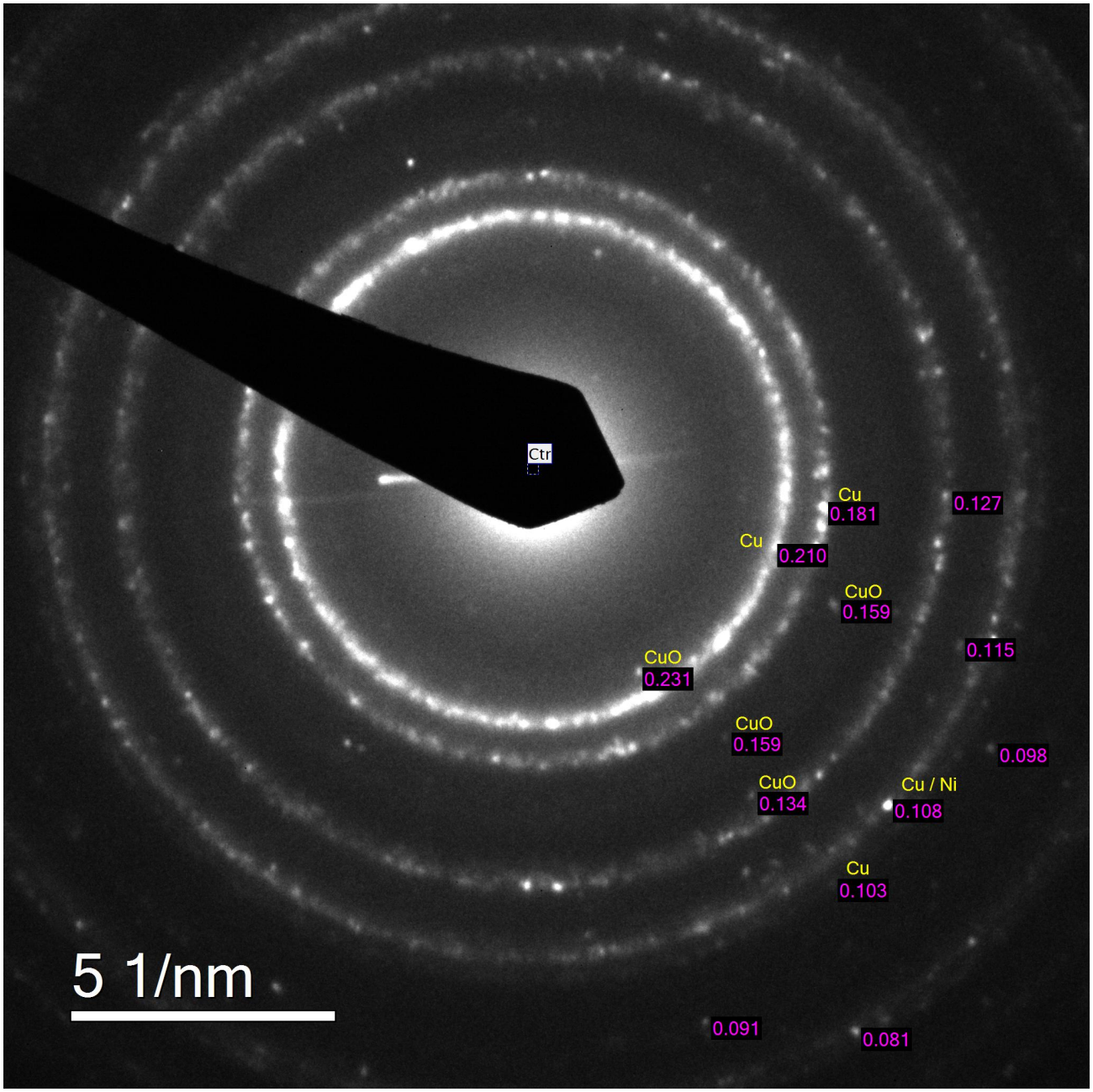


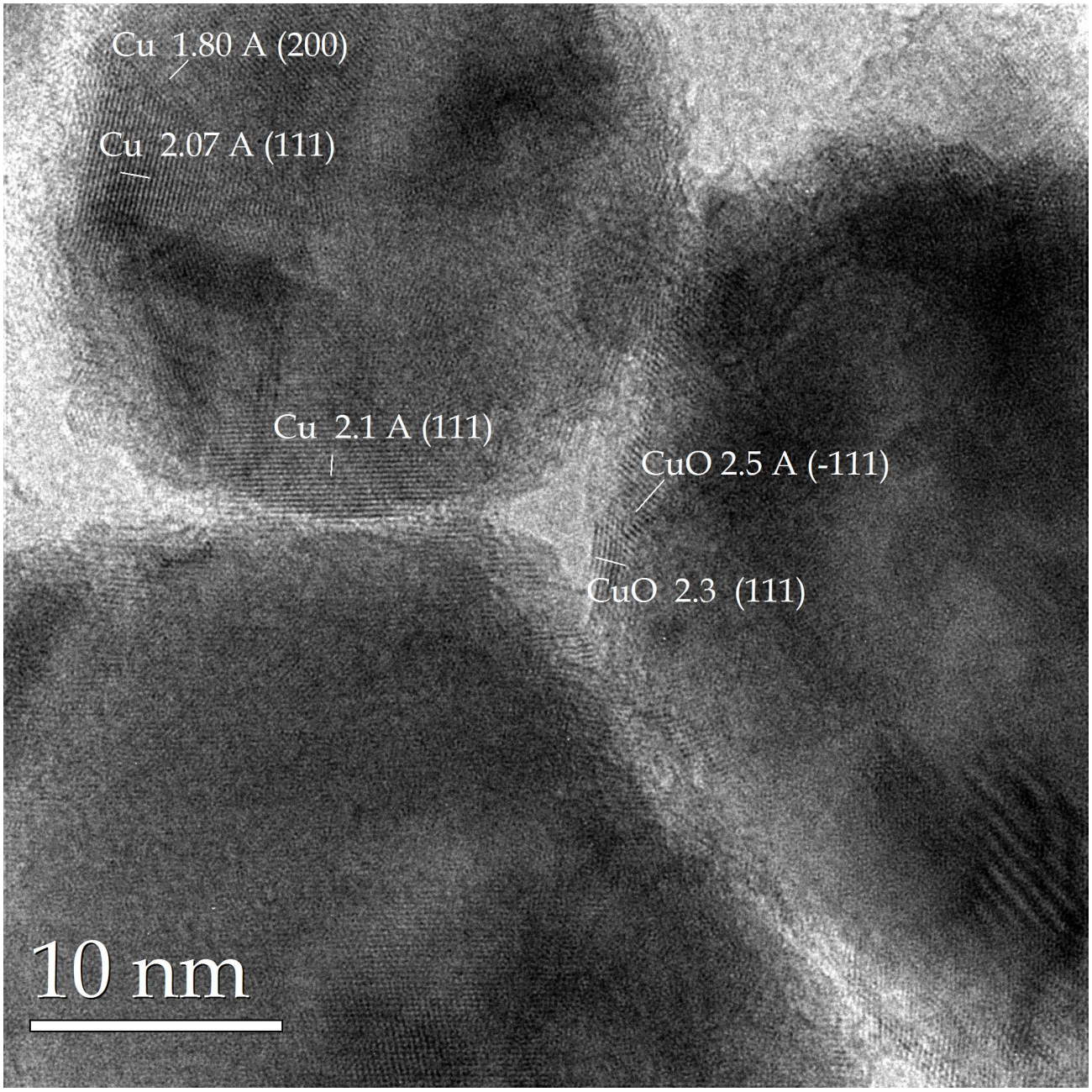
Supplementary Figure 2. Top – Ni core particles prepared via ‘seeding’ method with the (EA)2[Pt(II)(OH)6] precursor; and bottom – their Gaussian fitted size distribution

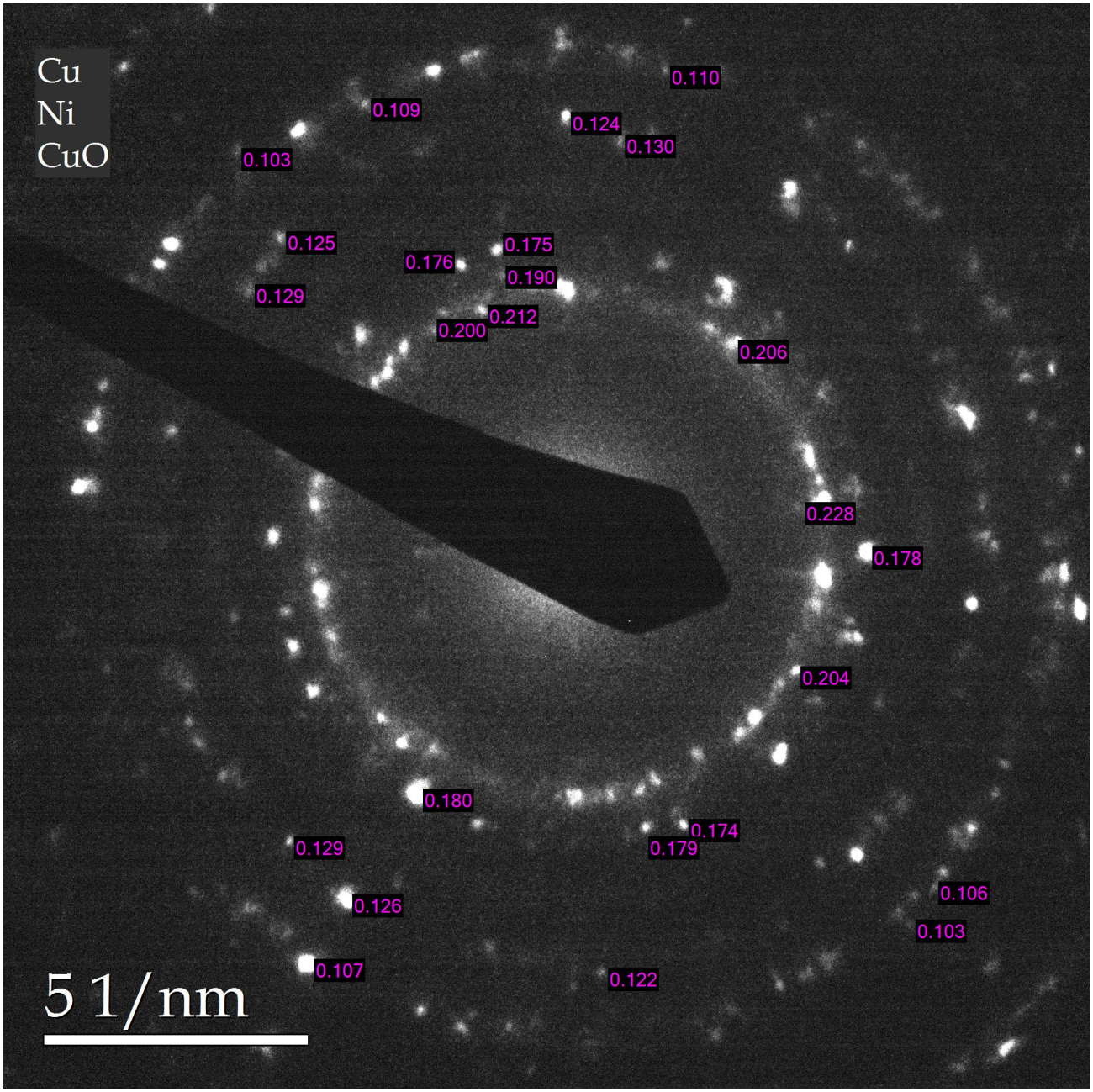

20 nm


2.08A Cu
5 nm
2.31A CuO

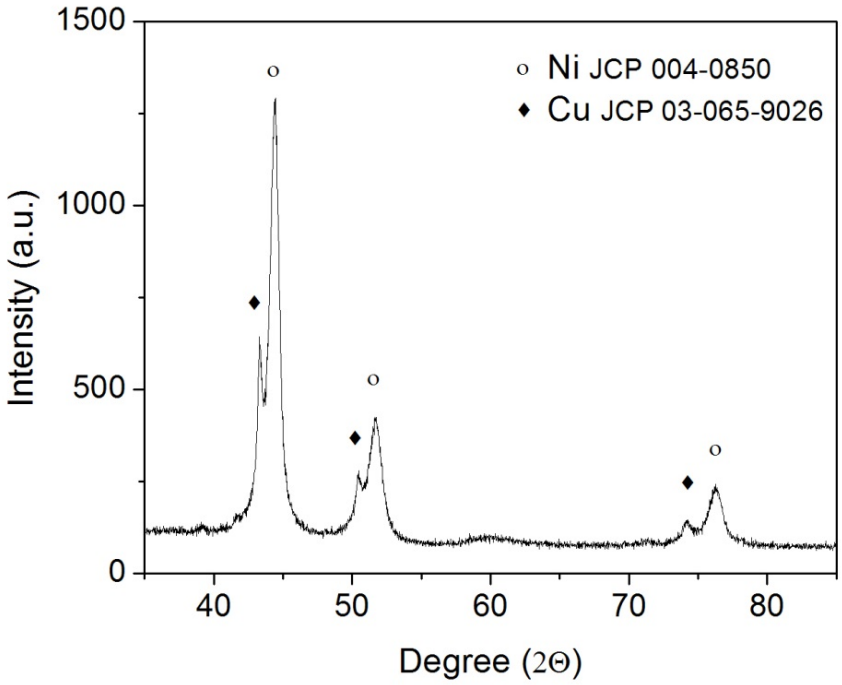

Ni 2.02 A (111)
Ni 1.78 A (200)
Cu 2.07 A (111)
CuO 2.5 A (-111)
10 nm


Ctr
Cu
0.181
0.127
Cu
0.210
CuO
0.159
0.115
CuO
0.231
CuO
0.159
0.098
CuO
0.134
Cu / Ni
0.108
Cu
0.103
5 1/nm
0.091
0.081


Cu 1.80 A (200)
Cu 2.07 A (111)
Cu 2.1 A (111)
CuO 2.5 A (-111)
CuO 2.3 (111)
10 nm



Supplementary Figure 3. TEM, high-resolution TEM and selected area electron diffraction of the Ni core particles coated with the 2–4 nm continuous copper shell, micrographs indicate Cu shell and oxidized copper patches were formed



Supplementary Figure 4. XRD pattern of Ni/Cu core-shell particles prepared via ‘seeding’ method.