Supporting Information for

A new strategy for finely controlling the metal (oxide) coating on colloidal particles with tunable catalytic properties

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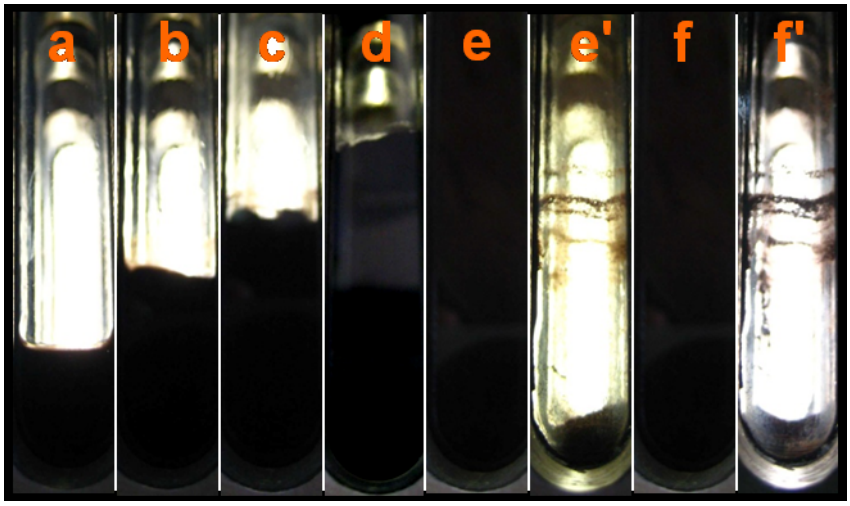

Figure S1. A viewable process of coating the core particles with a uniform layer of metal-salt from precursors in CO_2 expanded fluid. (a-e) The colloidal ethanol solution of precursors (e.g., $Ni(NO_3)_2 \bullet 6H_2O$) was expanded by CO_2 and formed a homogeneous fluid under rapid stirring at 150 ^oC. (e') The carbon colloids in fluid would precipitate immediately if stopped stirring, therefore the stirring is very important for a uniform coating and avoiding the formation of independent metal-salt. (f) The metal-salt were formed at 200 ^oC and deposited on the surface of suspended carbon colloids. (f') The phase states of (f) after the stirring was stopped. The transparent solution indicates all the precursors converted into metal-salt completely, and the clear viewable window demonstrates the formed metal-salt were all coated on carbon colloids instead of independent Ni-salt formed and attached on window.

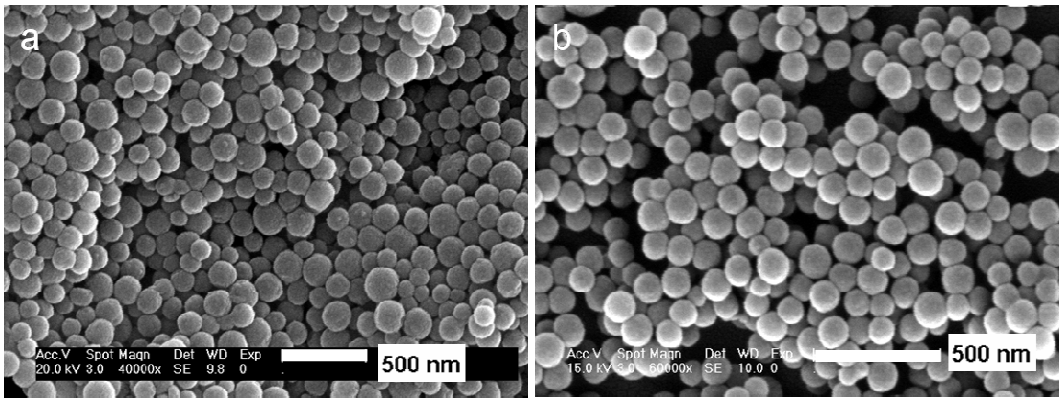

Figure S2. FESEM images of particles coated with a layer of solid-shell. (a) C@Ni-salt (0.02 M). (b) C@Co-salt (0.01 M).

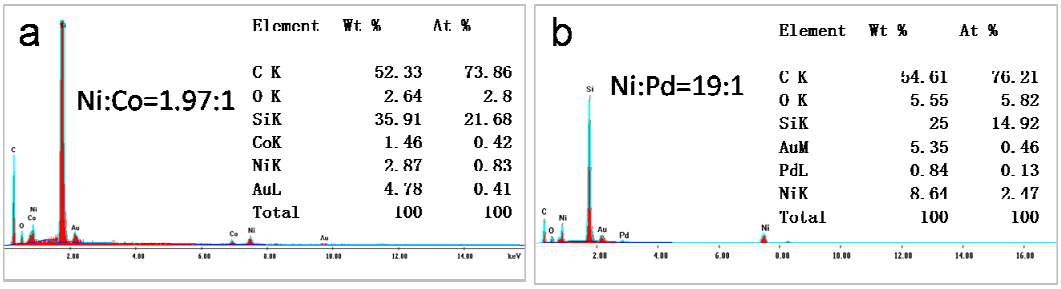

Figure S3. (a) EDXA spectra of the C@Ni&Co particles. The molar ratio of Ni to Co is 1.97:1. (b) EDXA spectra of the C@Ni&Pd particles. The molar ratio of Ni to Pd is 19:1