Surpporting Information:

**Structure-evolution of palladium nanoparticles and their electrocatalytic activity toward ethanol oxidation in alkaline solution**

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**Figure S1** TEM images of Pd intermediates during the synthesis of Pd-a with the reaction time of 30 min (A), 60 min (B) and 120 min (C).

**Figure S2** TEM images of Pd products obtained from the systems containing Pd-a as the seed (3 reaction cycles) (A) and solid Pd-b as the seed (B).