

Supplementary Information

**A general approach to electrochemical deposition of high quality
free-standing noble metal (Pd, Pt, Au, Ag) sub-micron tubes
composed of nanoparticles in polar aprotic solvent**

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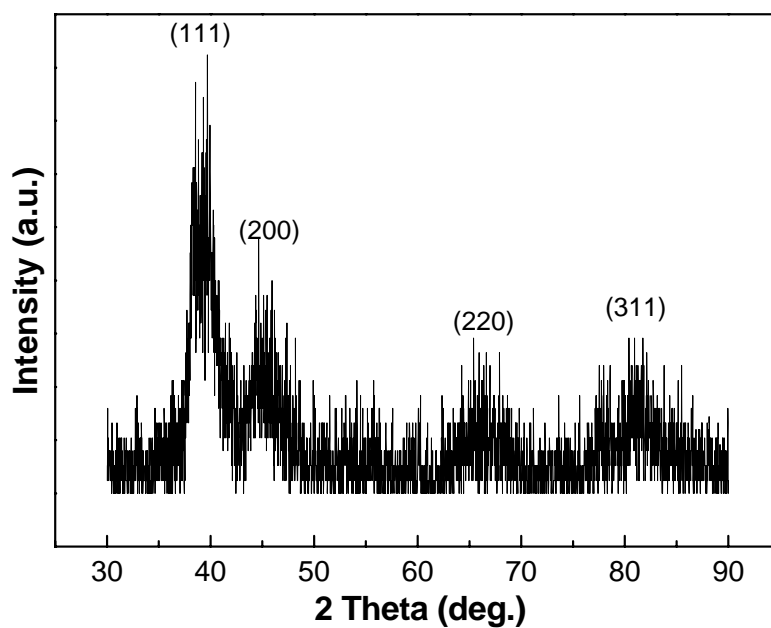


Fig. S1 XRD pattern of the Pd STNs after removal of AAO template with NaOH (2.0 M).

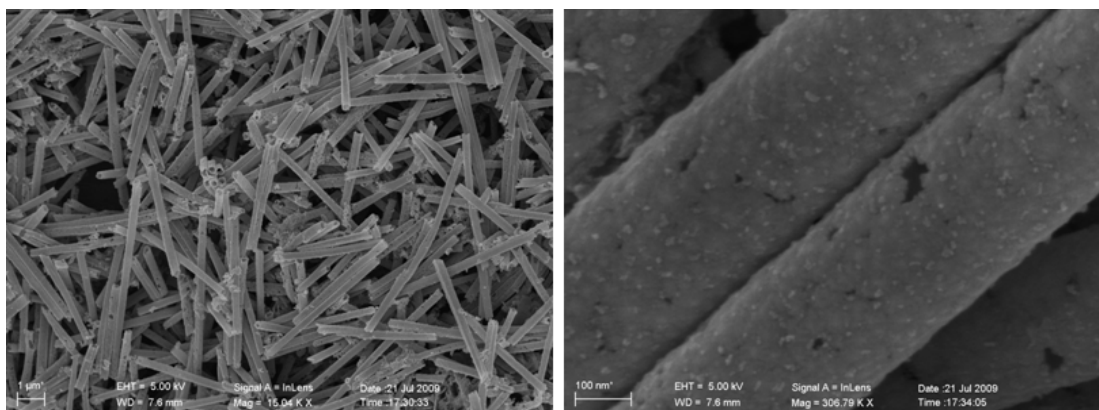


Fig. S2 SEM images of dispersed Pd STNs under high intensity ultrasound treatment at different magnifications.

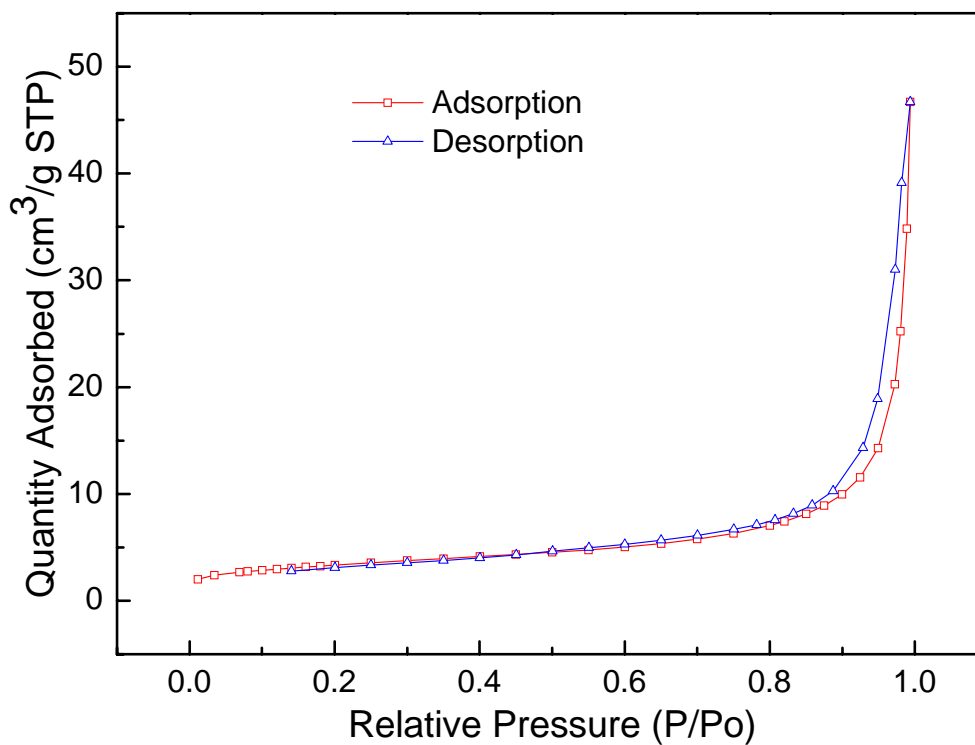


Fig. S3 N₂ adsorption-desorption isotherm of the Pd STNs with the diameters of about 300 nm under high intensity ultrasound dispersion.

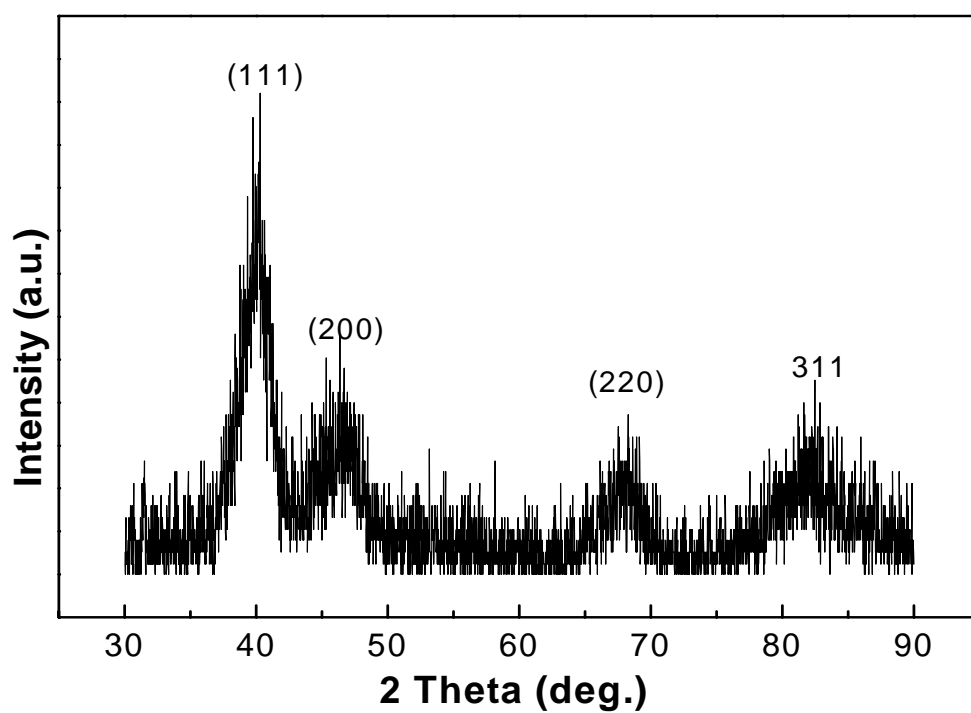


Fig. S4 XRD pattern of the Pt STNs after removal of AAO template with NaOH solution (2.0 M).

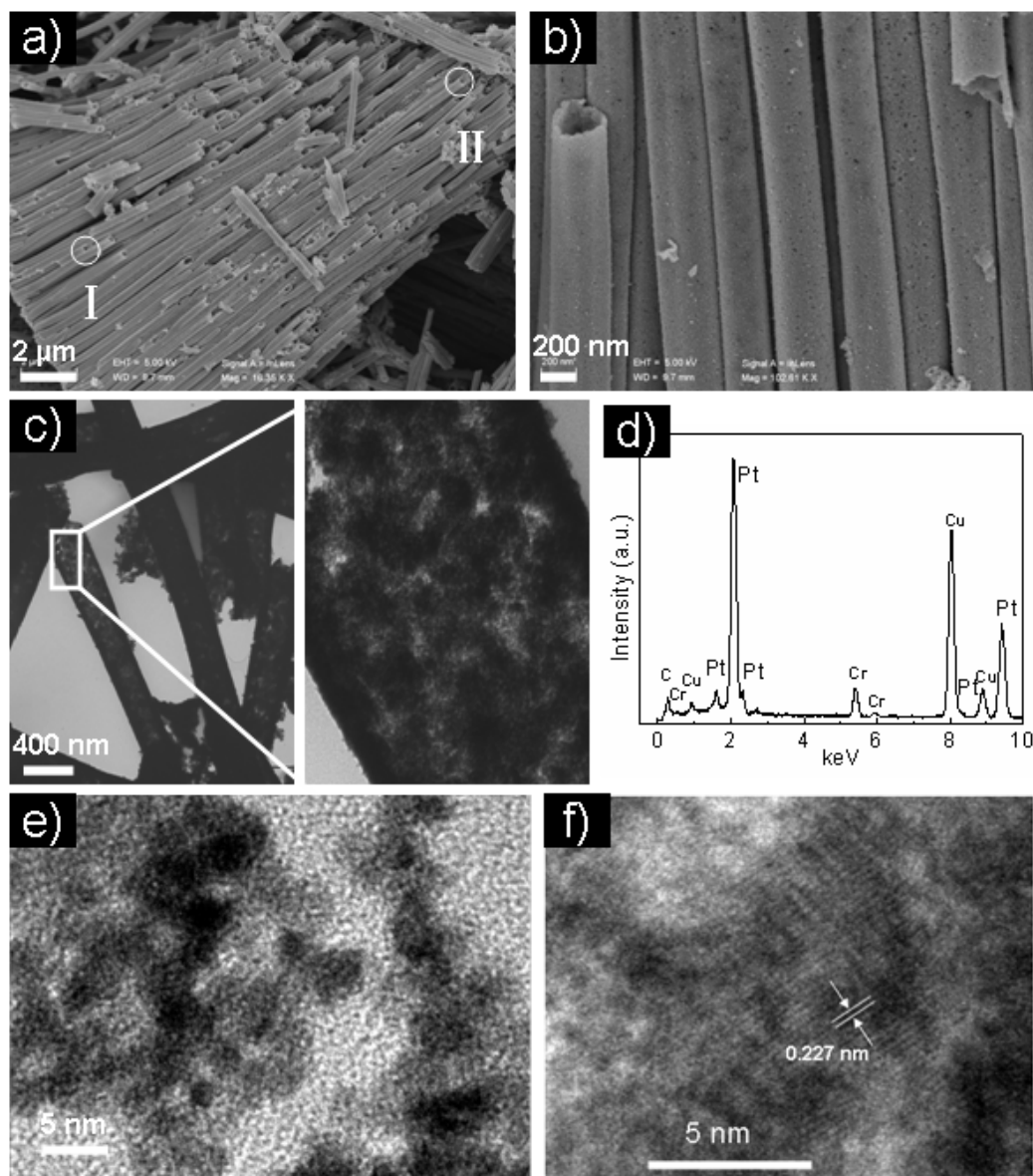


Fig. S5 a) Side-view SEM image of the Pt STNs. The obvious orifice marked “I” near the bottom and the “II” at the tip. b) Side-view SEM image of the Pt STNs at higher magnification. c) TEM images of Pt STNs at different magnifications after high intensity ultrasound treatment. d) The corresponding EDS of the Pt STNs. e, f) HRTEM images of Pt STNs near the orifice at different magnifications.