Supporting Information

One-pot solvothermal method to synthesize Platinum/$W_{18}O_{49}$ ultrafine nanowires and their catalytic performance

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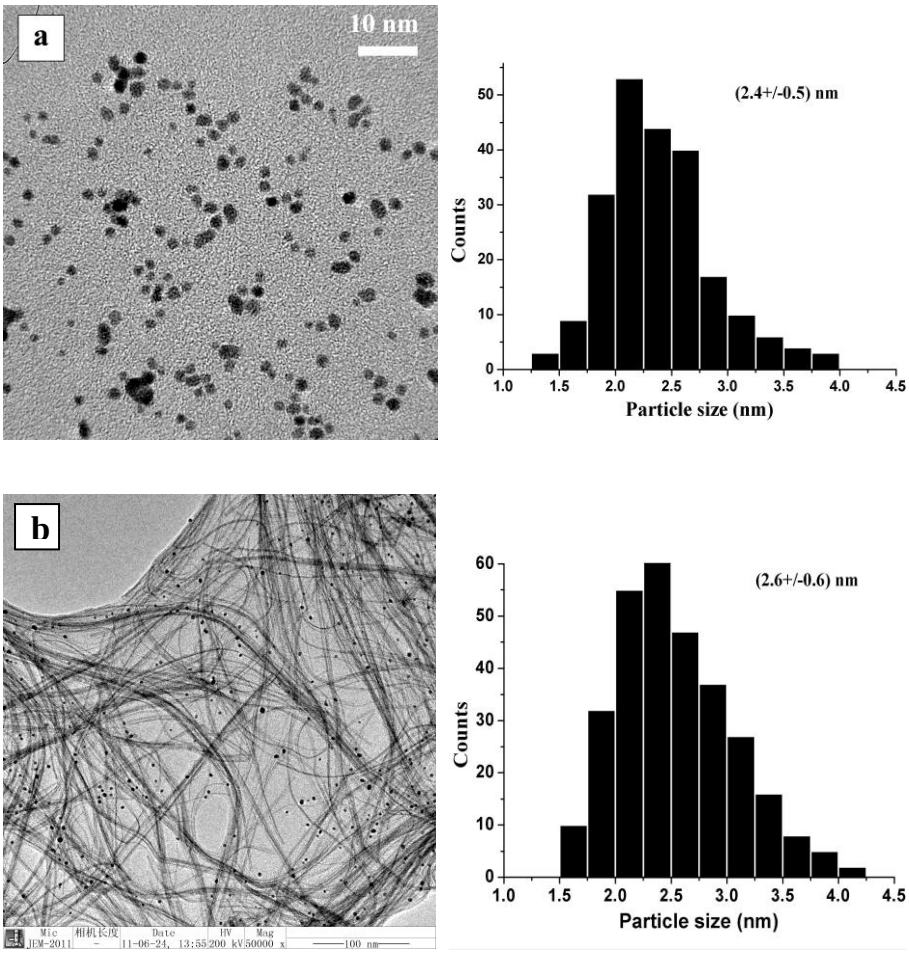

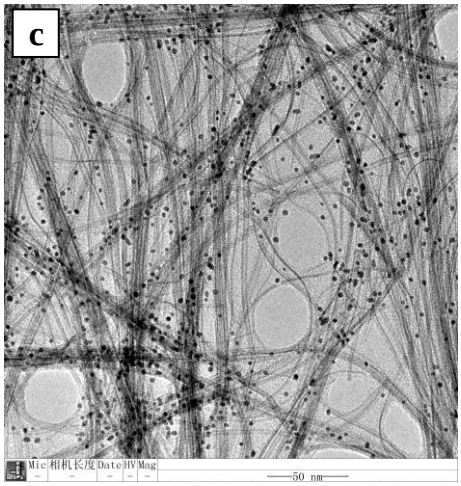

Figure S1. TEM images together with the Pt particle size distribution diagrams: a) PVP-stabilized Pt nanoparticles; b) $Pt/W_{18}O_{49}$ sample prepared with $R_{p/w}$=3. The corresponding particle size distribution obtained by counting more than 200 particles in the TEM images; c) $Pt/W_{18}O_{49}$ sample prepared with $R_{p/w}$=6, Pt theoretical loading = 4 wt%.

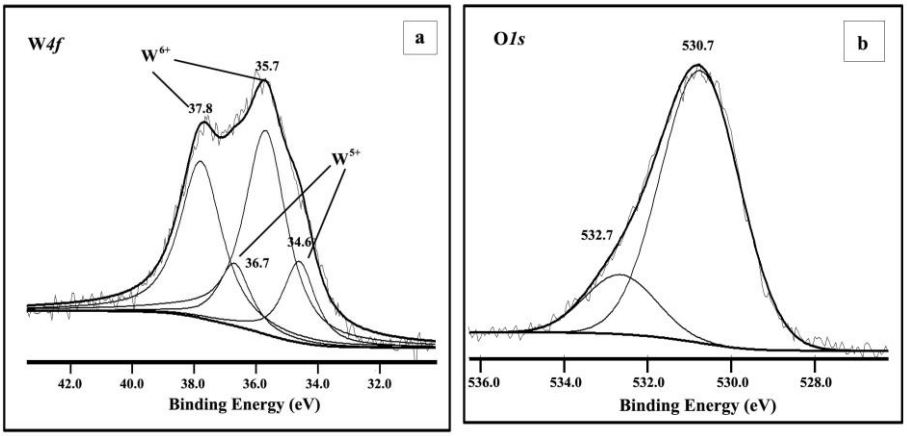

Figure S2. W4f- (a) and O1s-level (b) XPS spectra of the $Pt/W_{18}O_{49}$ sample prepared with $R_{p/w}$=3. The spectrum of O1s-level can be decomposed into separate peaks. The peak with binding energy at 530.7 eV corresponded to O1s-levels of oxygen atoms O^{2-} in the lattice of $W_{18}O_{49}$, and the other peak with weak intensity at 532.7 eV was assigned to the absorbed water molecules on the free oxide surface.

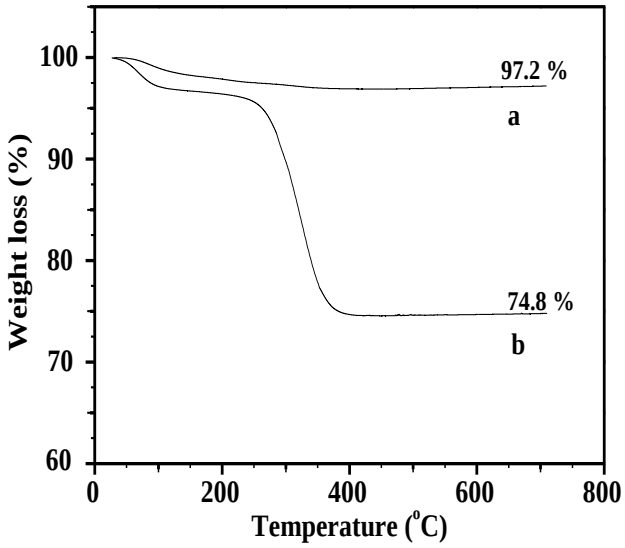

Figure S3. TGA diagrams of: a) pure $W_{18}O_{49}$, and b) Pt/$W_{18}O_{49}$ sample prepared with $R_{p/w}$=3.

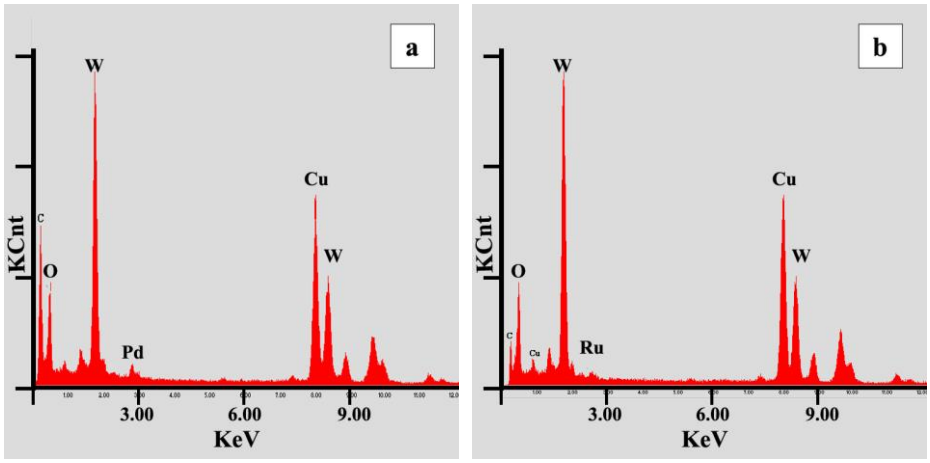

Figure S4: The corresponding EDX patterns of Pd/$W_{18}O_{49}$ (a) and Ru/$W_{18}O_{49}$ nanocomposites (b).