## **Supplementary Information**

## Structurally Ordered Pt-Zn/C Series Nanoparticles as Efficient Anode Catalysts

for Formic Acid Electrooxidation

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Figure S1. XRD patterns of commercial Pt.



Figure S2. TEM images of commercial Pt.



Figure S3. XRD patterns of PtZn/C-200.



Figure S4. TGA curves of different samples.



Figure S5. Cyclic voltammograms of different electrocatalysts in 0.5 M  $H_2SO_4$  purged with  $N_2$  at room temperature and a sweep rate of 20 mV s<sup>-1</sup>.



Figure S6. Linear sweep voltammograms of different electrocatalysts in 0.5 M  $H_2SO_4$  + 0.5 M HCOOH at s sweep rate of 1 mV s<sup>-1</sup>.



Figure S7. Cyclic voltammograms in 0.5 M  $H_2SO_4 + 0.5$  M HCOOH purged with  $N_2$ , sweep rate of 50 mV s<sup>-1</sup>, at room temperature.



**Figure S8** Cyclic voltammograms of the Pt/C and  $Pt_3Zn_{10}/C-700$  in 0.5 M  $H_2SO_4 + 0.5$  M HCOOH purged with N<sub>2</sub> at a sweep rate of 50 mV s<sup>-1</sup> after different electrochemical treatment condition, no pre-treatment (A), after 50 cycles between +0.05 V and + 0.9 V in 0.5 M  $H_2SO_4$  (B), after 50 cycles between +0.05 V and +1.0 V in 0.5 M  $H_2SO_4$  (C).



Figure S9. XPS spectra of carbon supported  $Pt_3Zn$  nanoparticles before and after heat-treatment.



Figure S10. XPS fine spectra of Zn 2p of  $Pt_3Zn/C-300$ ,  $Pt_3Zn/C-700$  and  $Pt_3Zn_{10}/C-700$ .



Figure S11. (a) Linear sweep voltammograms. (b) Comparison of total mass-based activities at +0.5 V.