

## Supporting Information

### **Conducting Polymer nanofibers supported Pt Alloys: Unprecedented Materials for Methanol Oxidation with Enhanced Electrocatalytic Performance and Stability**

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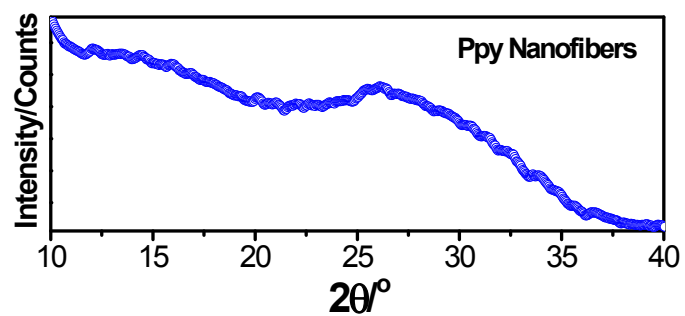


Fig. S1 XRD pattern of Ppy nanofibers.

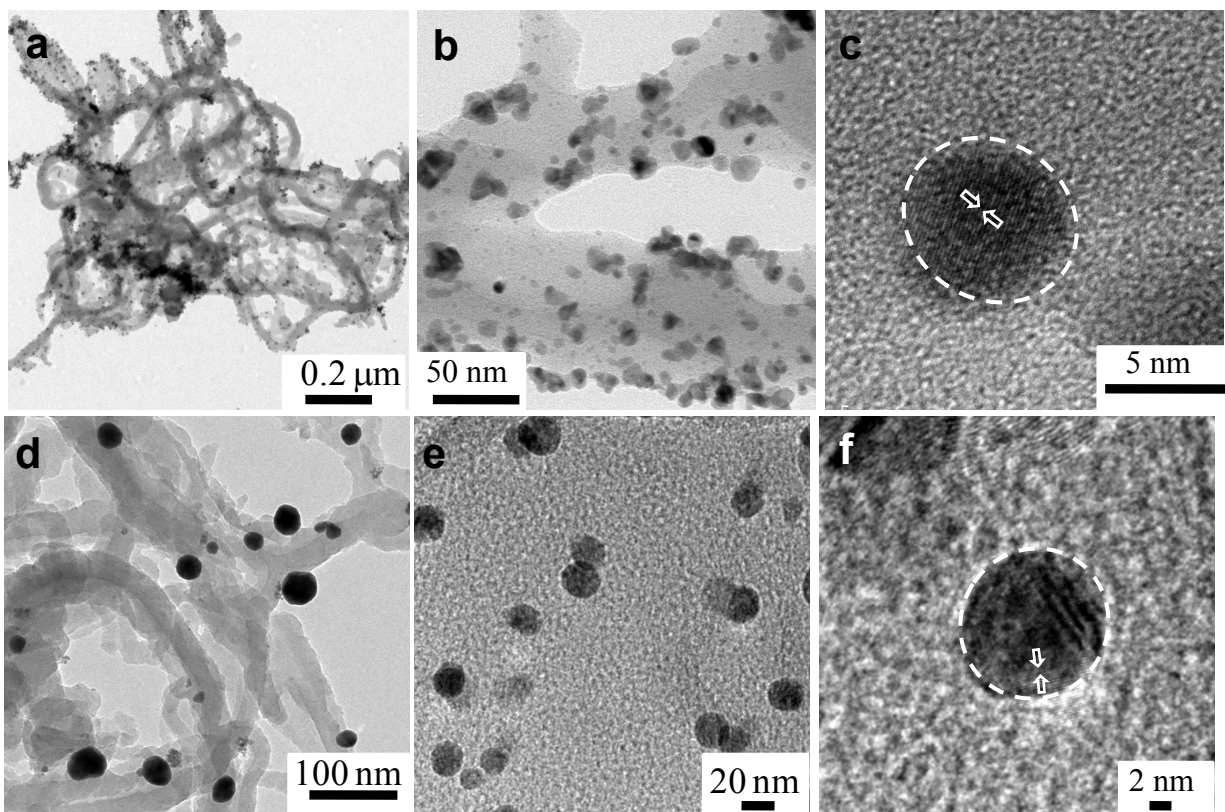


Fig.S2 Transmission electron micrograph of (a,b) Pd/Ppy nanocomposites at two different magnification, (c) HRTEM of Pd/Ppy, (d, e) Au/Ppy at two different, higher magnification, (f) HRTEM of Au/Ppy.

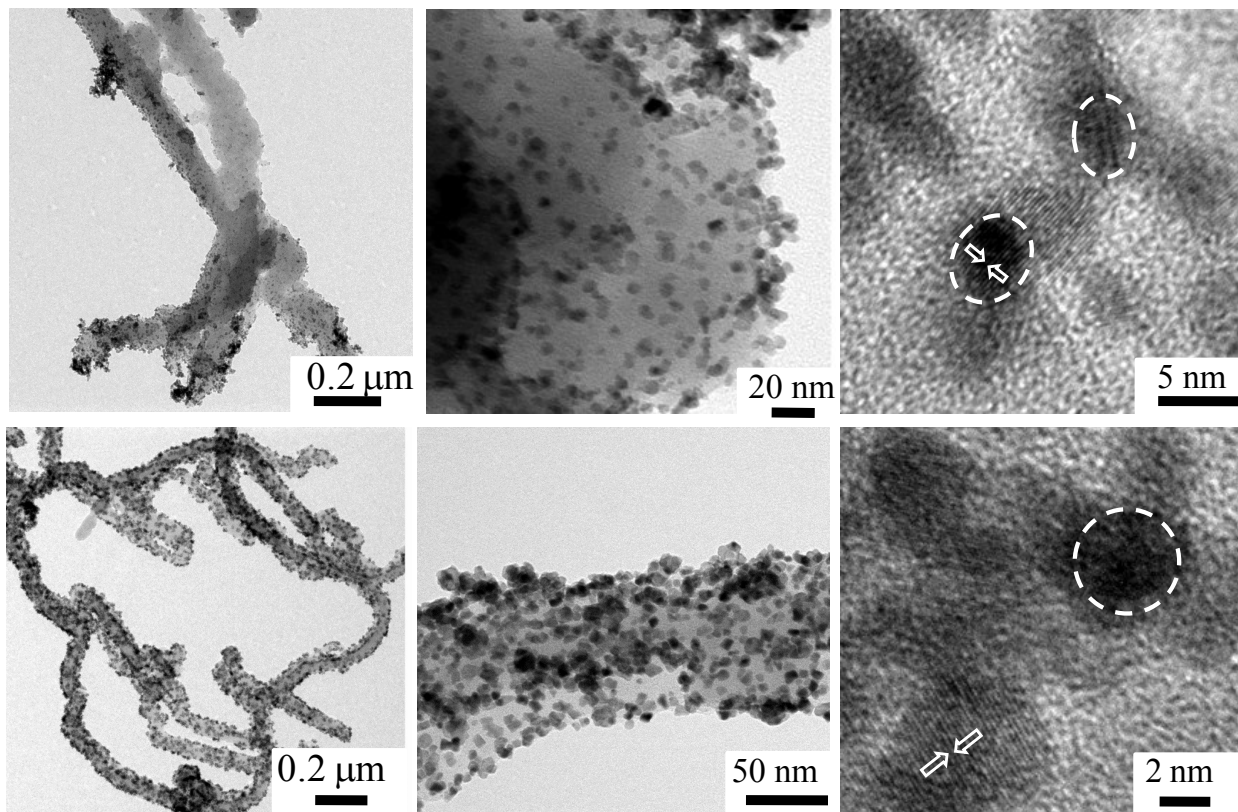


Fig.S3 Transmission electron micrograph of (a, b)  $Pt_{49}Pd_{51}/Ppy$  nanocomposite at two different magnification, (c) HRTEM of  $Pt_{49}Pd_{51}/Ppy$ , (d, e)  $Pt_{25}Pd_{75}/Ppy$  nanocomposite at two different, higher magnification, (f) HRTEM of  $Pt_{25}Pd_{75}/Ppy$ .

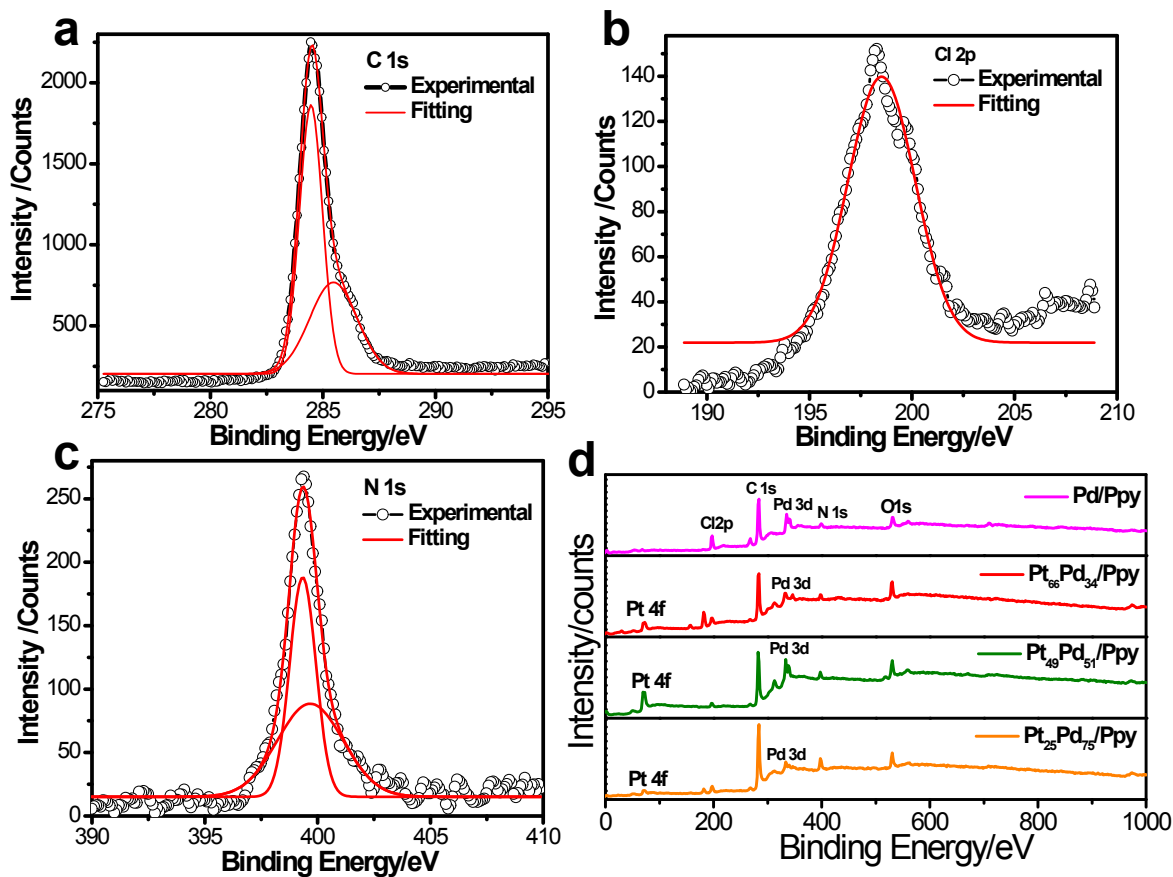


Fig.S4 Magnified XPS spectrum, (a) C1s, (b) Cl 2p and (c) N 1s in Pt/Ppy nanocomposites. (d) XPS pattern for the synthesized nanocomposites, Pt/Ppy, Pt<sub>66</sub>Pd<sub>34</sub>/Ppy, Pt<sub>49</sub>Pd<sub>51</sub>/Ppy, Pt<sub>25</sub>Pd<sub>75</sub>/Ppy.

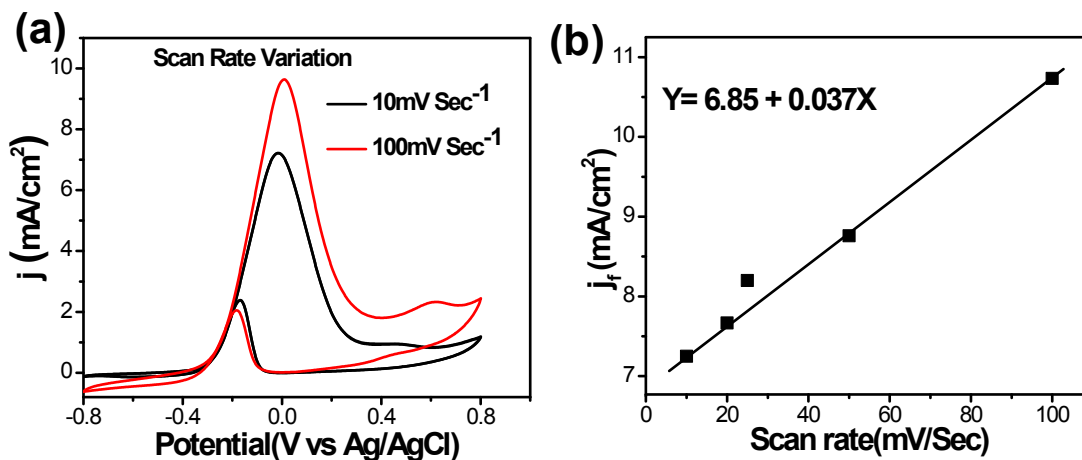


Fig.S5 Cyclic voltammety curves for MOR on Pt<sub>66</sub>Pd<sub>34</sub>/Ppynanocompositeat different scan rate variation, (b) plot of current density at different scan rate.

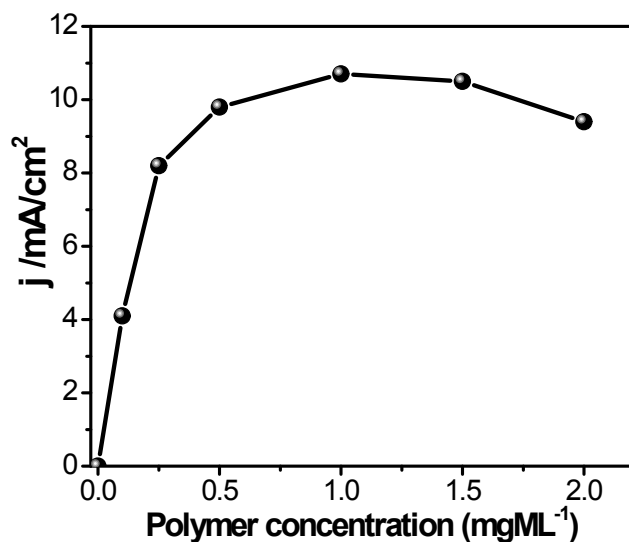


Fig S6 Effect of mass of polymer on Pt based catalysts for electro oxidation of methanol.

Table S1 Comparison of the electrochemical performance of Pt<sub>66</sub>Pd<sub>34</sub>/Ppy catalysts for the oxidation of methanol at different temperature. The main characteristics measured from cyclic voltammograms associated with the electrocatalytic oxidation of 1 M MeOH in 0.1 M KOH. The working electrode was a glassy carbon disc modified with the Pt nanostructures. The reference electrode was an Ag/AgCl electrode. The current density is referred to the geometric area of the glassy carbon support.

Temperature (°C)	$j_f$ (mA. cm <sup>-2</sup> )	$j_b$ (mA. cm <sup>-2</sup> )	$j_f/j_b$
20	0.70	.008	87.5
30	11	4.3	2.5
40	17.6	8.3	2.1
50	25	17	1.4