

## Supporting information

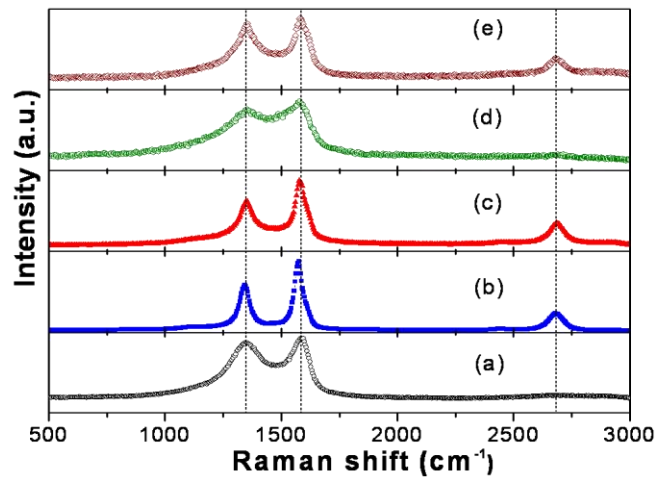
**Platinum-TM (TM=Fe, Co) alloy nanoparticles dispersed nitrogen doped (reduced graphene oxide-multiwalled carbon nanotube) hybrid structure cathode electrocatalysts for high performance PEMFC applications**

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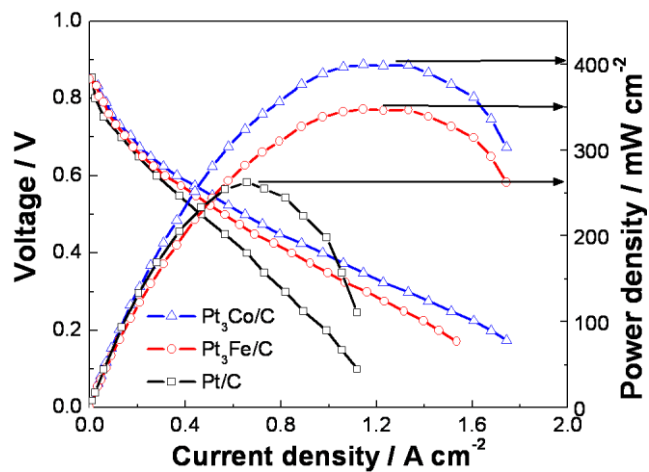
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**Figure S1:** Raman spectra for (a) rGO, (b) MWNTs, (c) (*pG - f*-MWNTs), (d) PPy-(*pG - f*-MWNTs), and (e) *N*-(G-MWNTs).

**Table S1:** The  $I_D/I_G$  ratios tabulated for different samples determined from their corresponding Raman spectra.

Sample name	$I_D/I_G$
rGO	0.89
MWNTs	0.66
<i>pG - f</i> -MWNTs	0.67
PPy-( <i>pG - f</i> -MWNTs)	0.72
<i>N</i> -(G-MWNTs)	0.97



**Figure S2:** Polarization curves of cathode electrocatalysts commercial Pt/C, Pt<sub>3</sub>Fe/C, Pt<sub>3</sub>Co/C with Pt/C as the anode electrocatalyst at 60 °C without any back pressure.