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Effect of the Viscosity of Poly(benzimidazole) on the Performance of a Multifunctional Electrocatalyst with an Ideal Interfacial Structure

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Supporting Information:

Results

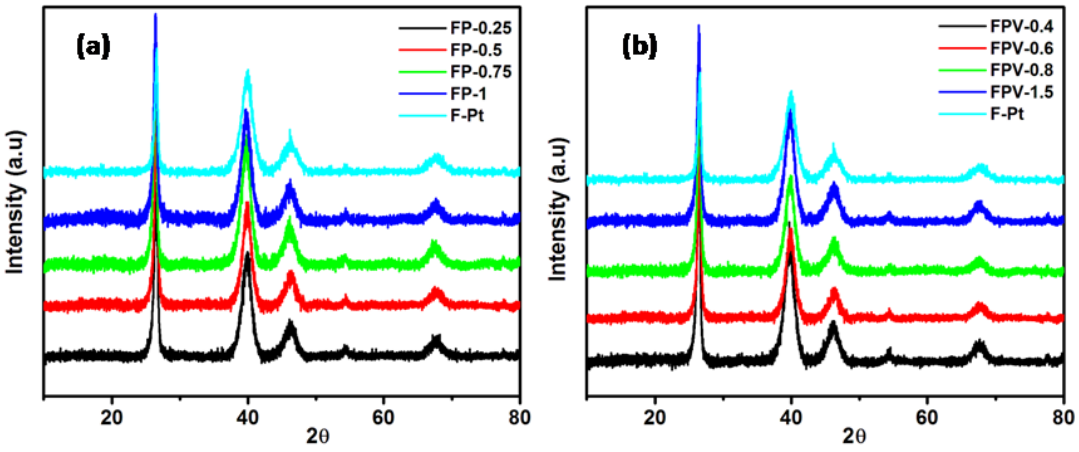
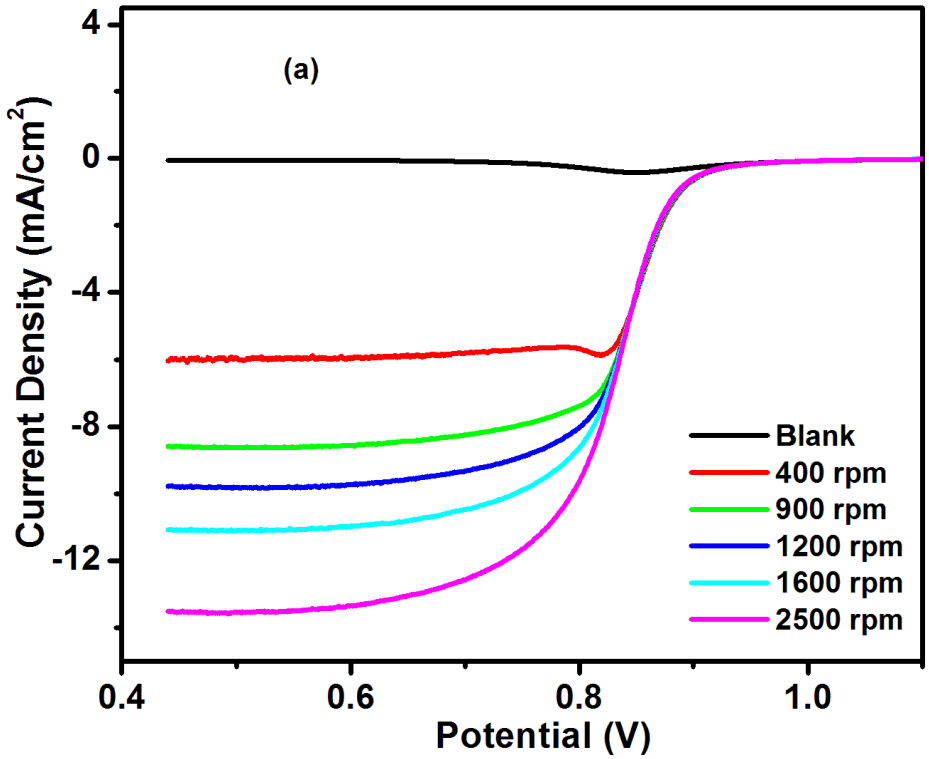
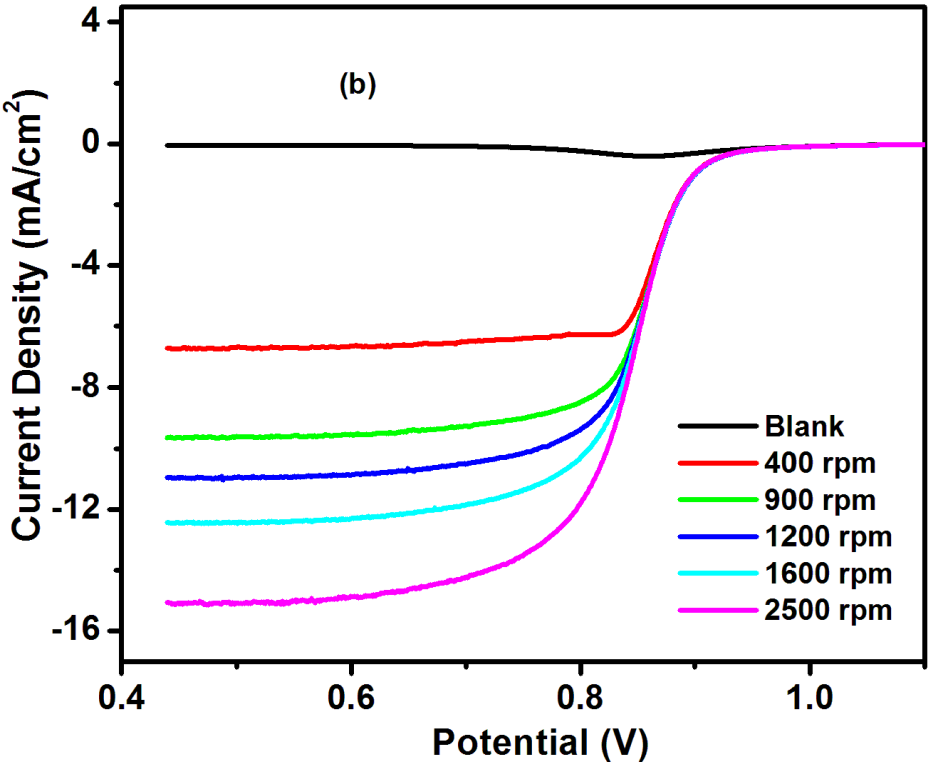


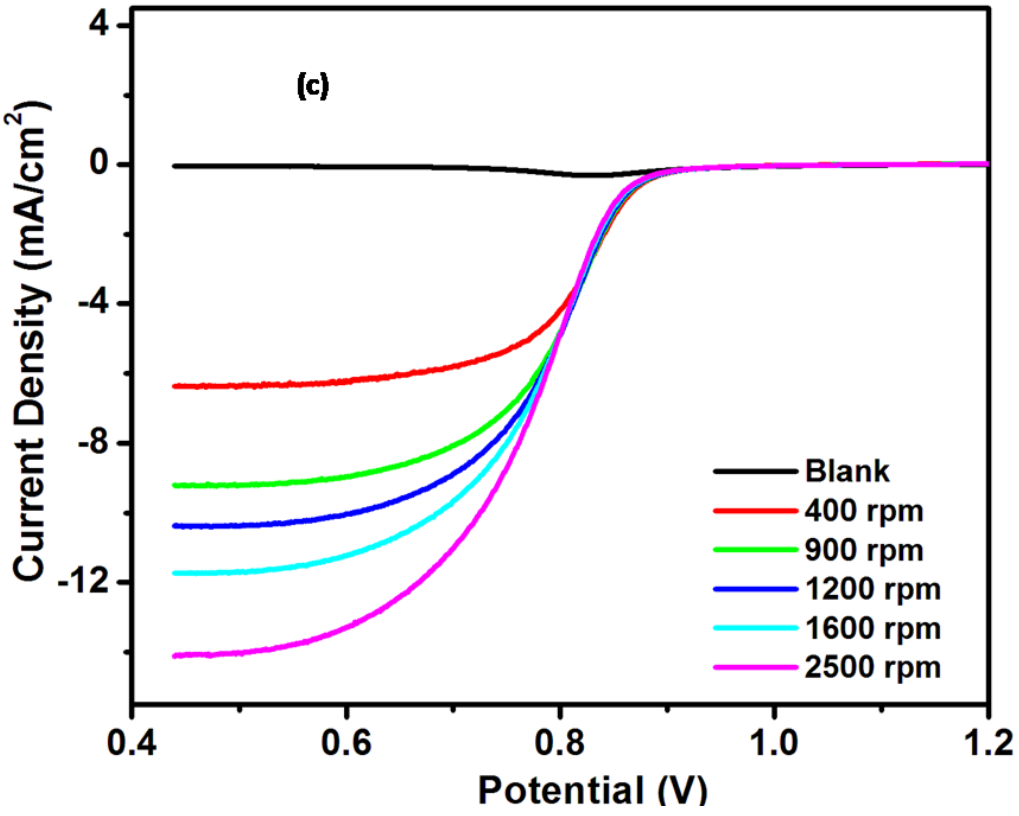
Figure S1: X-ray diffraction pattern obtained for (a) FP-0.25, FP-0.5, FP-0.75, FP-1 & F-Pt and (b) FPV-0.4, FPV-0.6, FPV-0.8 & FPV-1.5 & F-Pt.

Table S1: Calculated Pt loading in various catalyst materials after PBI-BuI incorporation

Sample Name	P/C	Initial Carbon (Wt.%)	Initial Pt Loading (Wt.%)	PBI-BuI (Wt.%)	Final Carbon (Wt.%)	New Pt Loading (Wt.%)
FP-0.25	0.25	81.8	18.2	20	101.8	14.62436
FP-0.5	0.5	81.8	18.2	40	121.8	12.22299
FP-0.75	0.75	81.8	18.2	60	141.8	10.49901
FPV-0.4	0.5	81.8	18.2	40	121.8	12.22299
FPV-0.8	0.5	81.8	18.2	40	121.8	12.22299
FPV-1.5	0.5	81.8	18.2	40	121.8	12.22299







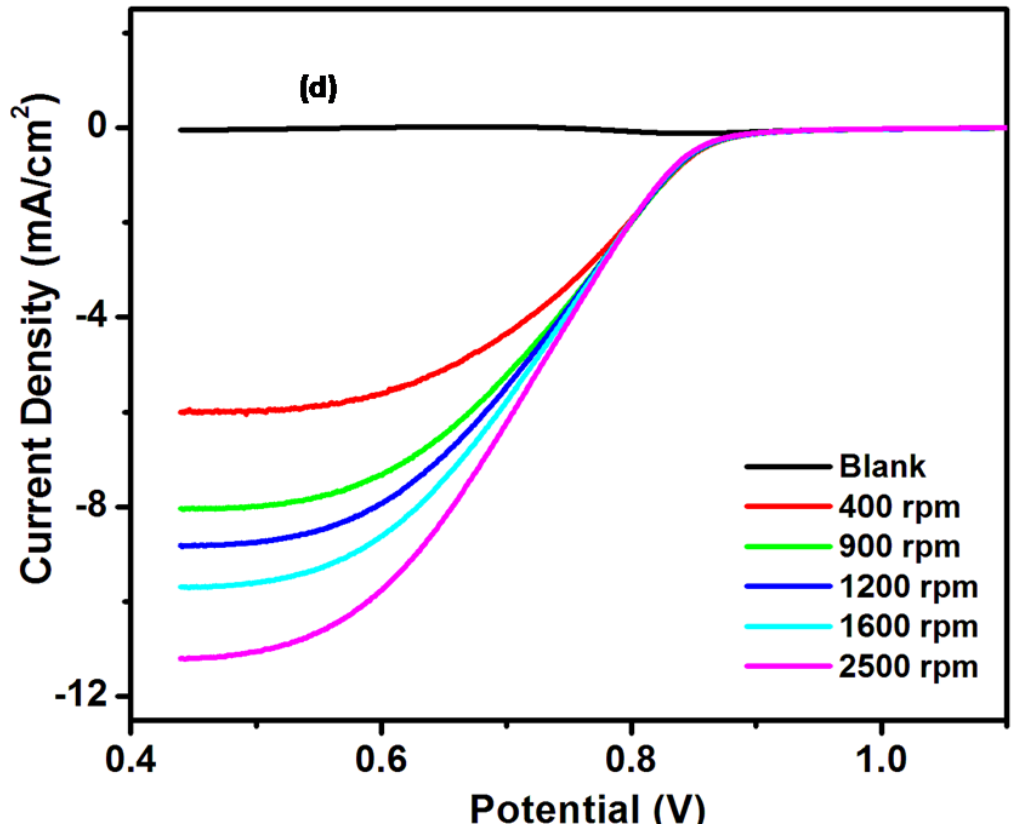


Figure S2: Linear sweep voltammograms obtained for (a) FPV-0.4 (b) FPV-0.6 (c) FPV-0.8 and (d) FPV-1.5 for ORR in 0.5 M $HClO_4$ at various rotating speeds from 400-2500 rpm at a scan rate of 5 mV/s.

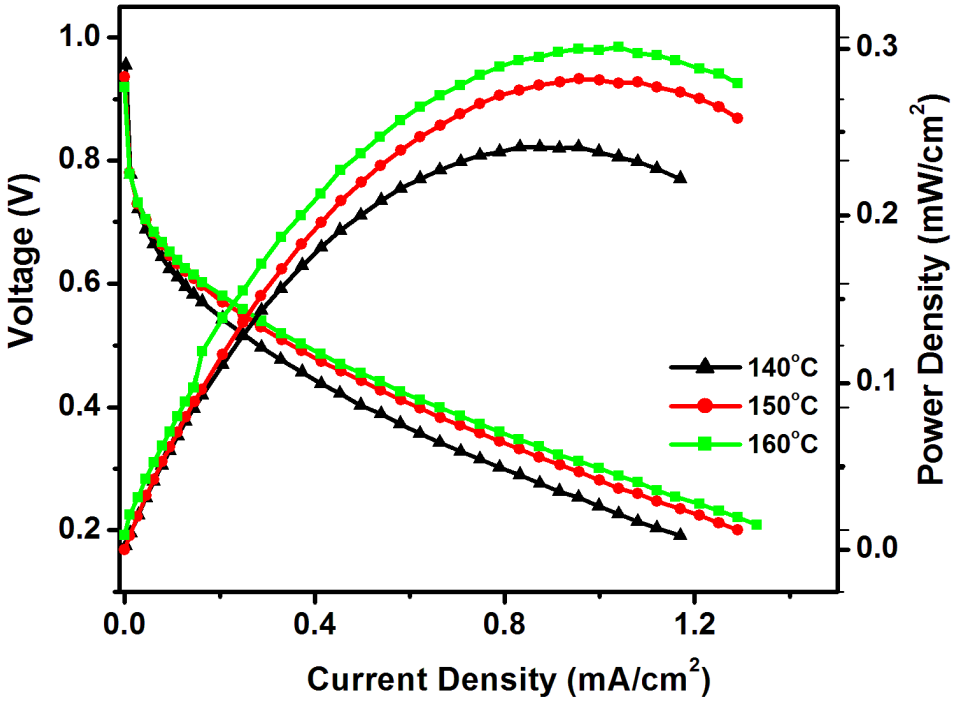


Figure S3: Single cell evaluation of the MEAs with the cathode electrodes formed from FPV-0.6 at temperatures 120, 140 and 160° C. Commercial 40 wt % Pt/C was used as the anode and Pt loadings of 0.30 and 0.20 mgPt cm^{-2} were maintained in the cathode and anode, respectively.