

Electronic Supplementary Information (ESI)

for

Poly(vinylpyrrolidone)-Wrapped Carbon Nanotube-Based Fuel Cell Electrocatalyst Shows High Durability and Performance Under Non-Humidified Operation

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Table S1. The D/G ratios of the MWNTs and MWNT/PVP/Pt calculated from the Raman spectroscopy.

	MWNTs	MWNT/PVP/Pt
D/G ratio	0.31	0.32

Table S2. the Pt-NP size calculated from the XRD measurement.

	MWNT/PVP/Pt	CB/Pt
Pt-NP size (nm)	2.3	2.2

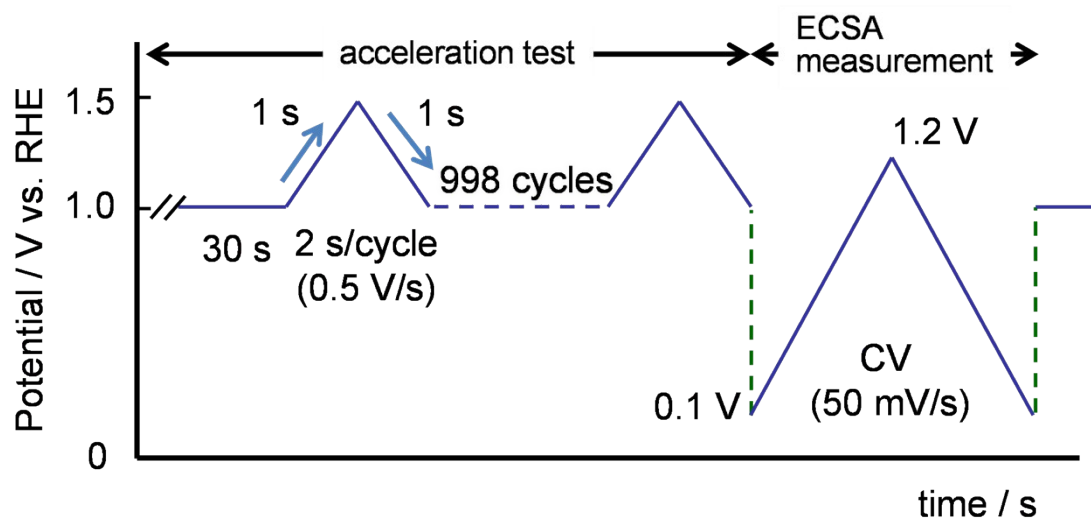


Figure S1. New test protocol of durability for a half-cell taken from FCCJ. (see K. Shinohara, A. Ohma, A. Iiyama, T. Yoshida and T. Daimaru, *ECS Trans.*, 2011, **41**, 775)

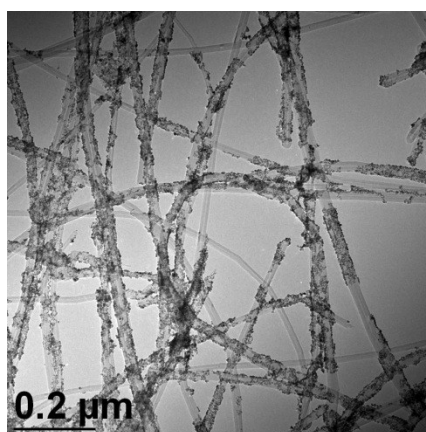


Figure S2. Low magnification TEM image of the as-synthesized MWNT/PVP/Pt.

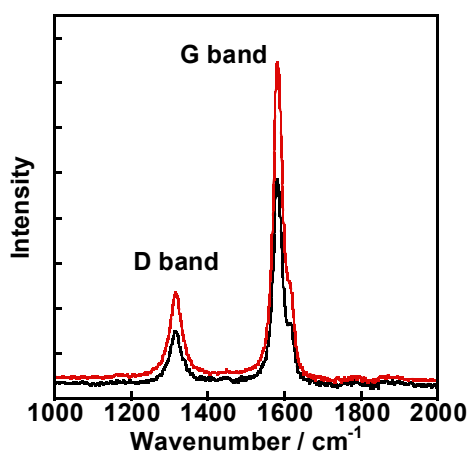


Figure S3. Raman spectra of the MWNTs (black line) and MWNT/PVP/Pt (red line), in which the D and G bands were shown.

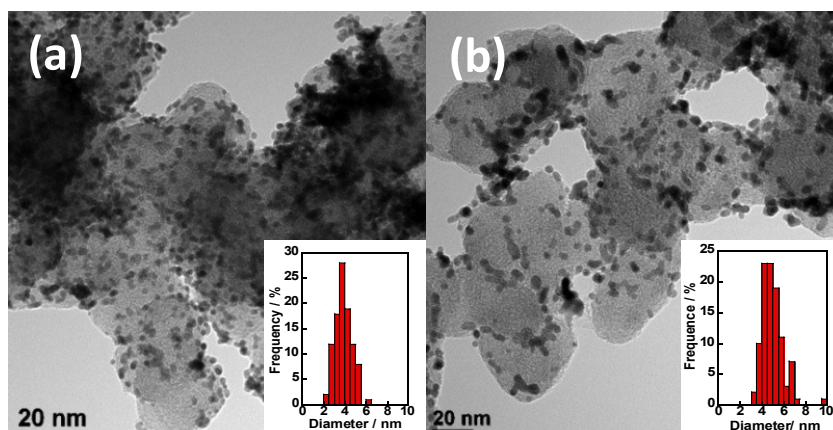


Figure S4. TEM images of the CB/Pt before and after durability testing and the particle size distribution histogram of 100 particles (inset).

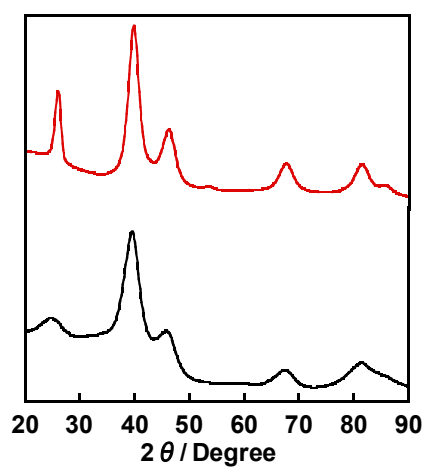


Figure S5. XRD patterns of the MWNT/PVP/Pt (red line) and CB/Pt (black line).

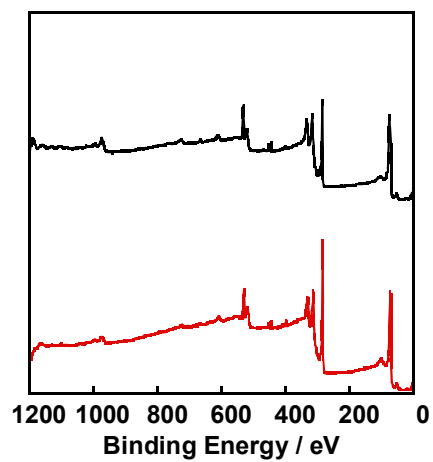


Figure S6. XPS survey scan of the MWNT/PVP/Pt (red line) and CB/Pt (black line).