

Supplementary Figures:

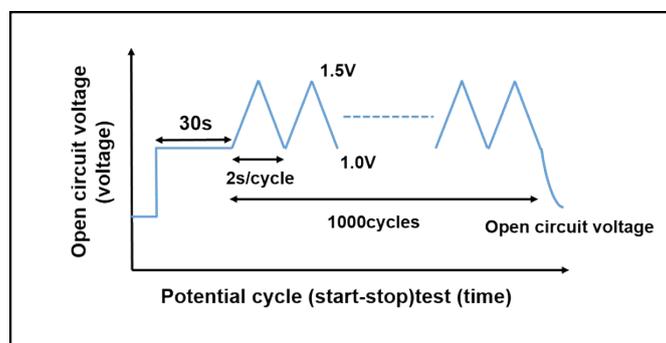


Fig. S1. Protocols for accelerated tests for carbon corrosion of Pt catalysts and MEAs proposed by US DOE and Japan's NEDO Project.

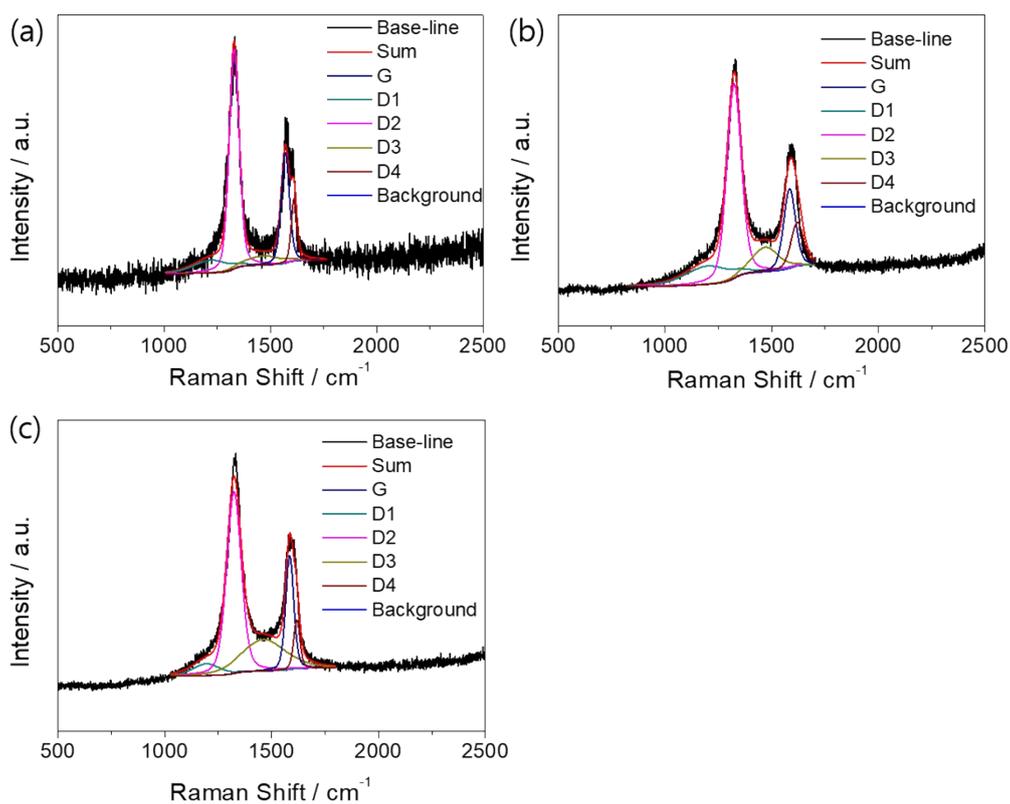


Fig. S2. Curve fitting of the Raman spectra of (a) Pt/PCNF, (b) Pt/SC, and (c) Pt/Hybrid catalysts.

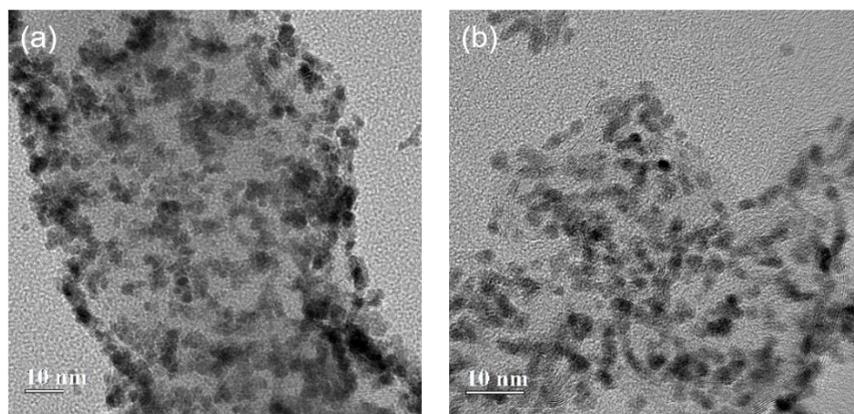


Fig. S3. TEM images of (a) Pt/PCNF and (b) Pt/SC catalysts.

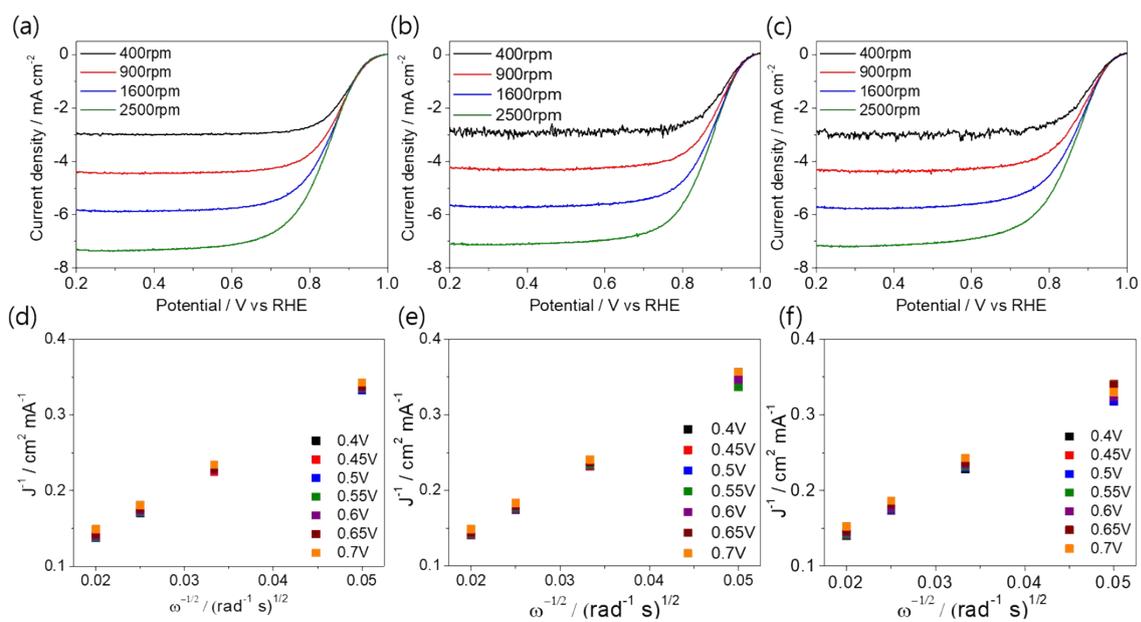


Fig. S4. (a–c) ORR activity and (d–f) Koutecky-Levich plots of Pt catalysts at 400–2,500 rpm. (a) Pt/SCNF (b) Pt/SC, and (c) Pt/Hybrid.

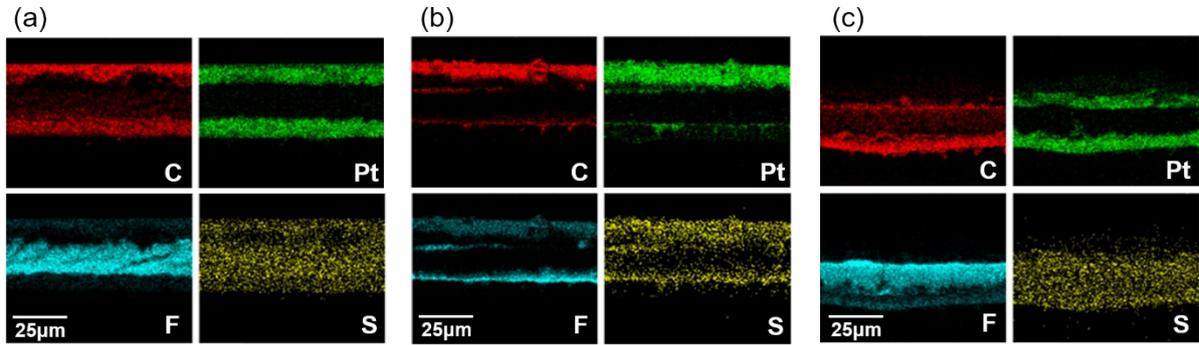


Fig. S5. Elemental analyses of cross-sectional fresh MEAs. (a) Pt/PCNF (b) Pt/SC (c) Pt/Hybrid-MEAs.

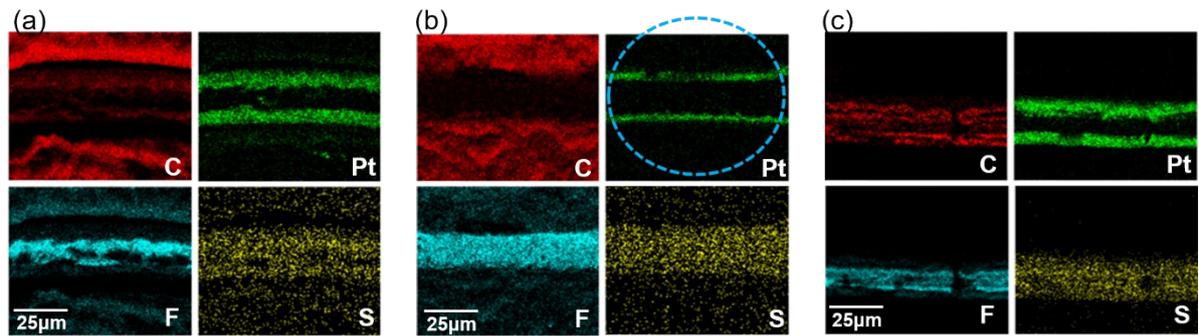


Fig. S6. Elemental analyses of cross-sectional MEAs after ADTs. (a) Pt/PCNF (b) Pt/SC (c) Pt/Hybrid-MEAs.

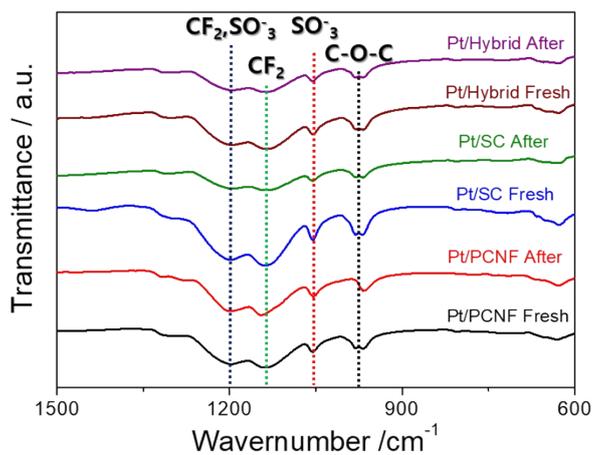


Fig. S7. ATR-FTIR spectra of Nafion membranes in the range between 600 and 1,500 cm^{-1} at room temperature before and after ADTs. Polymer electrolyte membranes in (a) Pt/SC, (b) Pt/SCNF, (c) Pt/Hybrid-MEAs.