Supplementary Information

Non-contact electric potential measurements of electrode components in operating polymer electrolyte fuel cell studied by near ambient pressure XPS

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Figure S1. O 1s spectra recorded with water vapor pressures of 500 and 4,000 Pa at the cathode. The spectra were measured at a voltage of 0.4 V.

Figure S2. C 1s spectra recorded with a wider energy region at the voltages of 0.8 and 1.2 V. The contribution of -CF$_2$- in Nafion is clearly seen.
Figure S3. HAXPES of (a) Pt 3d, (b) F 1s, (c) O 1s and (d) C 1s at the anode under various voltages between the cathode and anode. These spectra were recorded at a water vapor pressure of 4000 Pa and a H2 gas pressure of 200 Pa at the anode, whereas N2 gas was supplied to the cathode.

Figure S4. HAXPES of (a) Pt 3d, (b) F 1s, (c) O 1s and (d) C 1s at the cathode under various voltages between the cathode and anode under O2 atmosphere.
Figure S5  The current changes with the voltage increasing at the cathode under only water vapor atmosphere and O$_2$ flowing atmosphere.