Preparation and Fuel Cell Performance of Catalyst Layers Using Sulfonated Polyimide Ionomers

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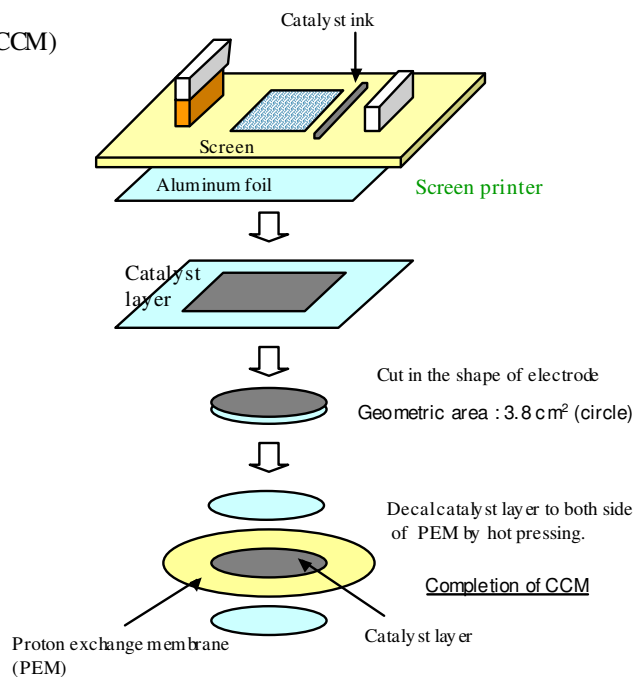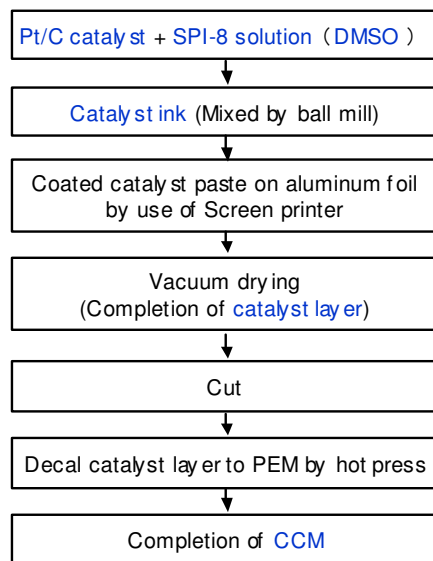
Preparation of Catalyst-Coated Membrane (CCM)

Catalyst ink

Pt/C catalyst + SPI-8 solution（DMSO）

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Catalyst ink (Mixed by ball mill)

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Coated catalyst paste on aluminum foil by use of Screen printer

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Vacuum drying (Completion of catalyst layer)

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Cut

↓

Decal catalyst layer to PEM by hot press

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Completion of CCM

Screen

Aluminum foil

Screen printer

Catalyst layer

Cut in the shape of electrode

Geometric area : 3.8 cm^2 (circle)

Decal catalyst layer to both side of PEM by hot pressing.

Completion of CCM

Proton exchange membrane (PEM)

Catalyst layer

Figure S1 Preparation procedure of catalyst-coated membrane (CCM) with SPI-8 ionomer as a binder in the catalyst layer.

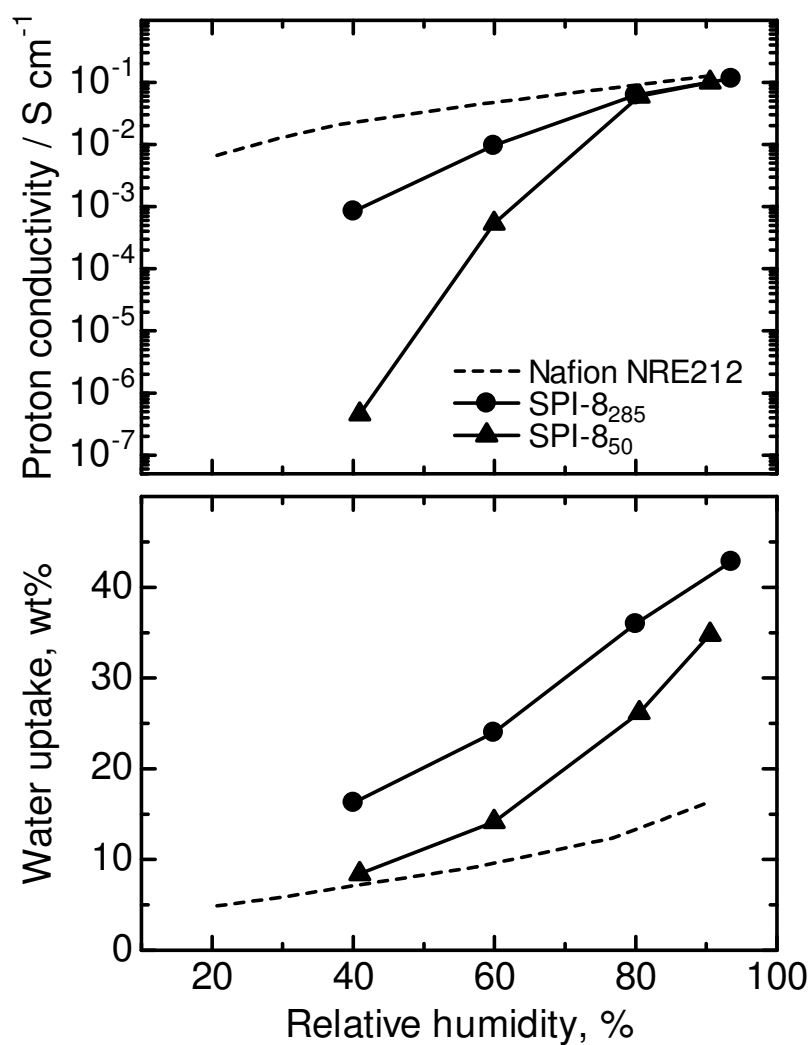**Figure S2** Humidity dependence of proton conductivity (top) and water uptake (bottom) of SPI-8$_{50}$, SPI-8$_{285}$, and NRE212 membranes at 80 °C.