Supporting Information

Post-assembly Modification of Polymeric Composite Membrane using Spin Drying for Fuel Cell Applications

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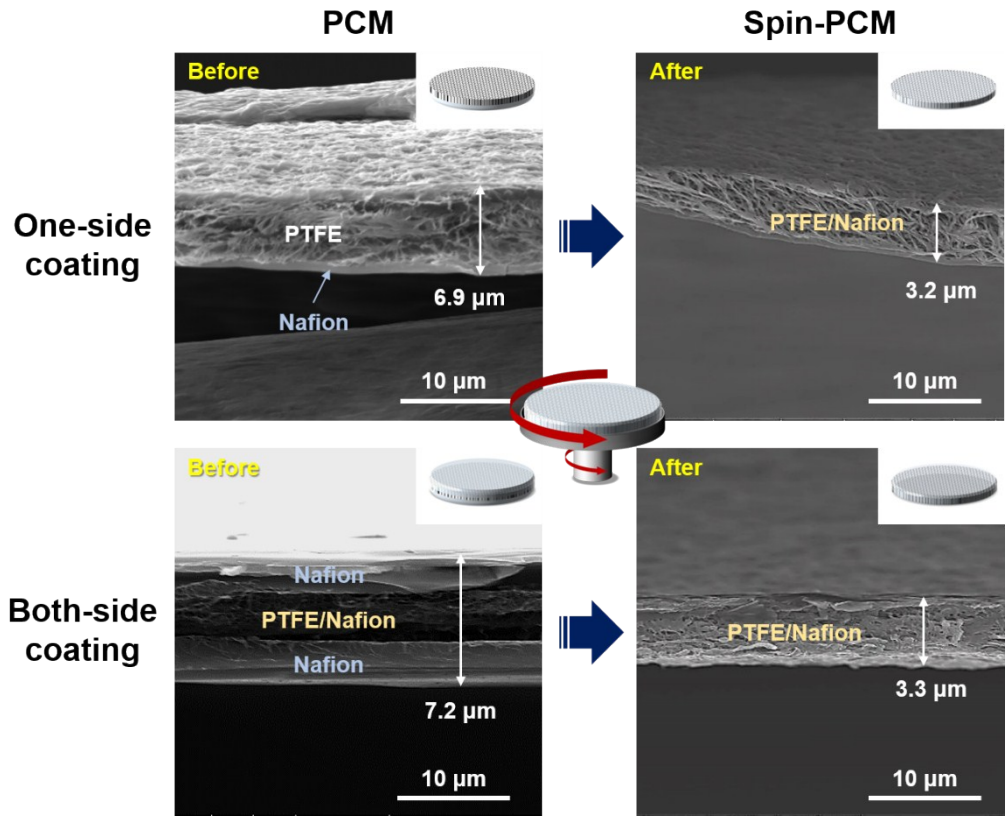

Fig. S1 The SEM images of one-side and both-side coated PCMs before and after spin-drying (2,000 rpm).

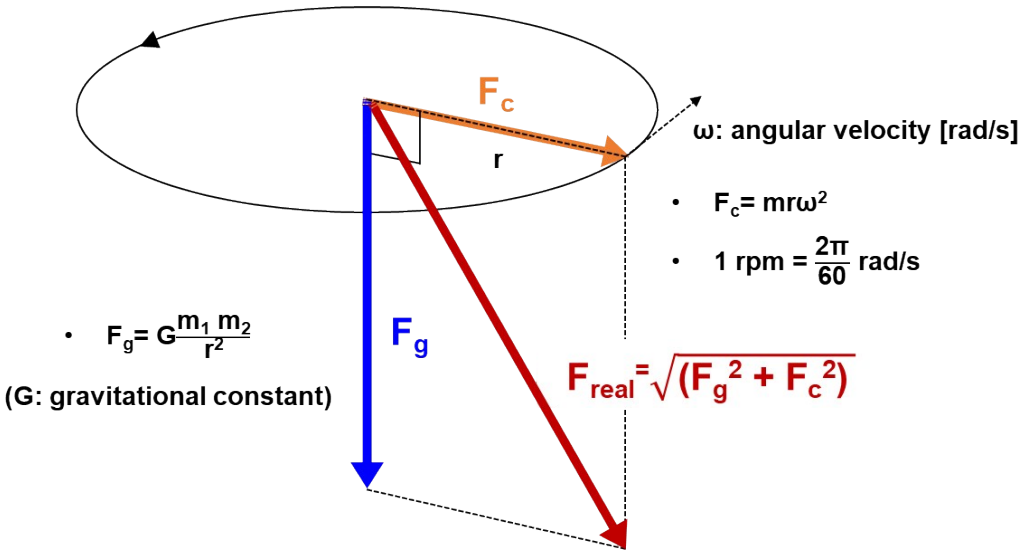

Fig. S2 The relation between rotating speed and applied real force to the membrane during spin-drying.

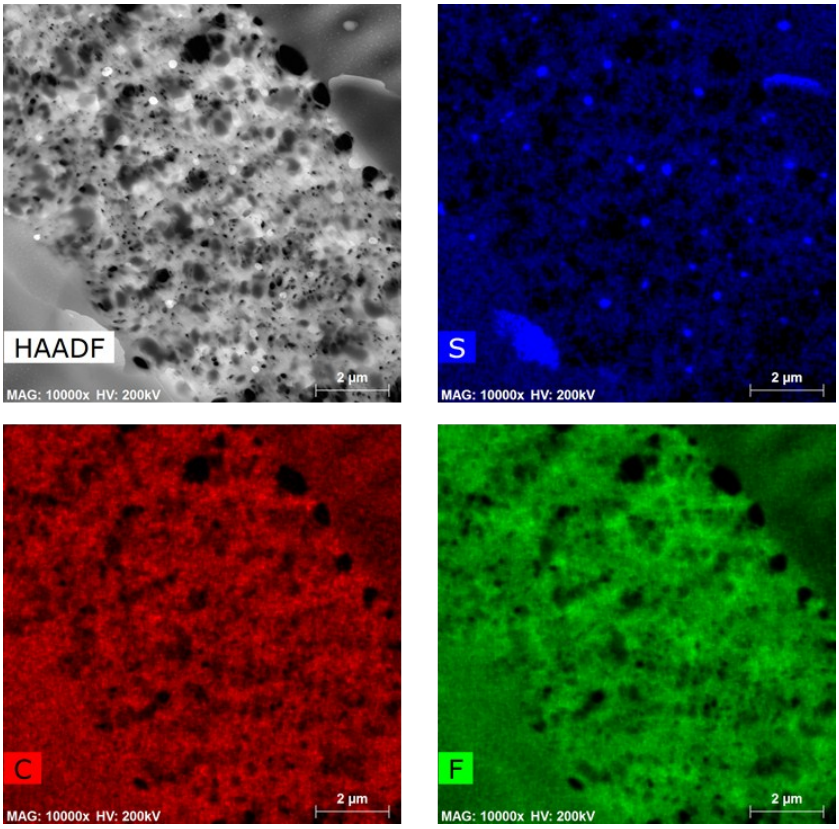

Fig. S3 The HAADF and corresponding elemental mapping (S, C, and F) images of Spin-PCM (2,000 rpm) obtained from TEM analysis.

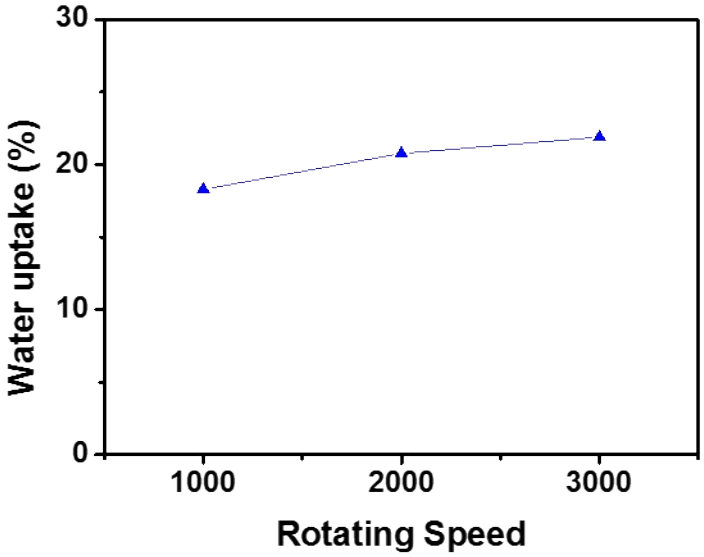

Fig. S4 Water uptake results of Spin-PCM obtained at different rotating speeds (1,000, 2,000, and 3,000 rpm).

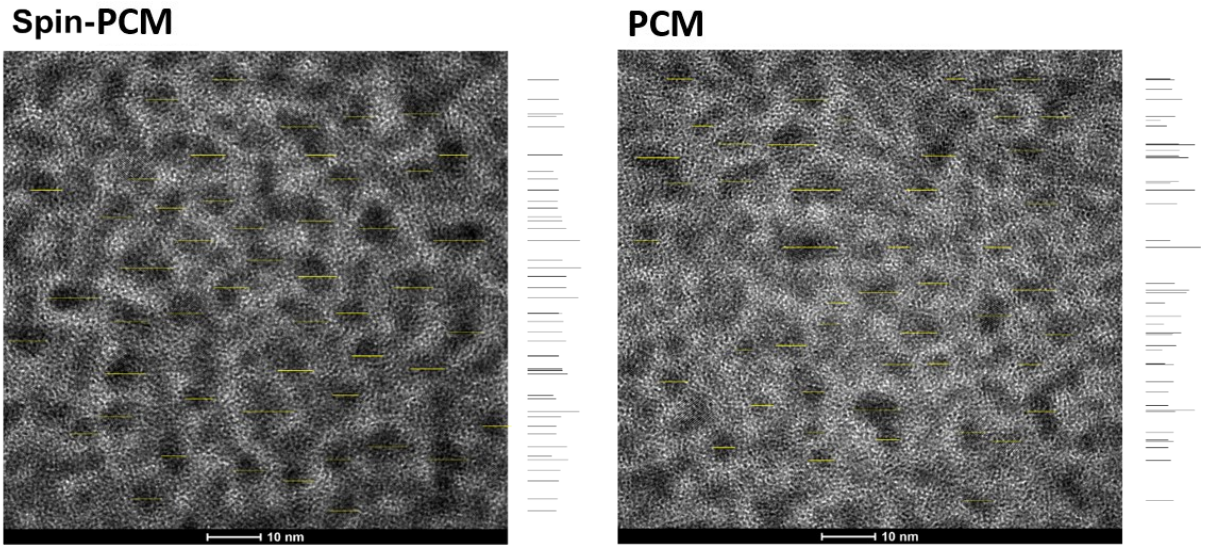

Fig. S5 Randomly selected dark spots for counting ionic cluster size in PCMs.

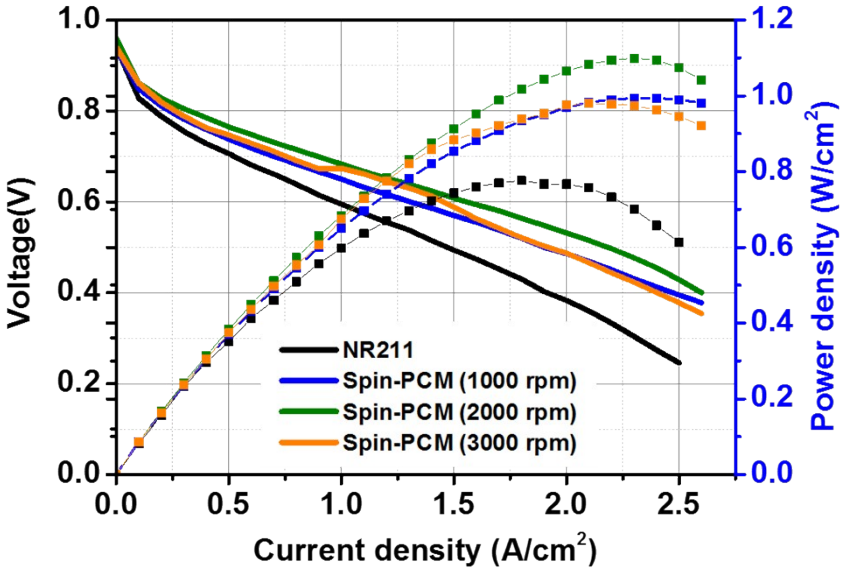

Fig. S6 Polarization curves and power densities of MEAs using Spin-PCMs (1,000, 2,000 and 3,000 rpm) and commercial NR211 membrane.

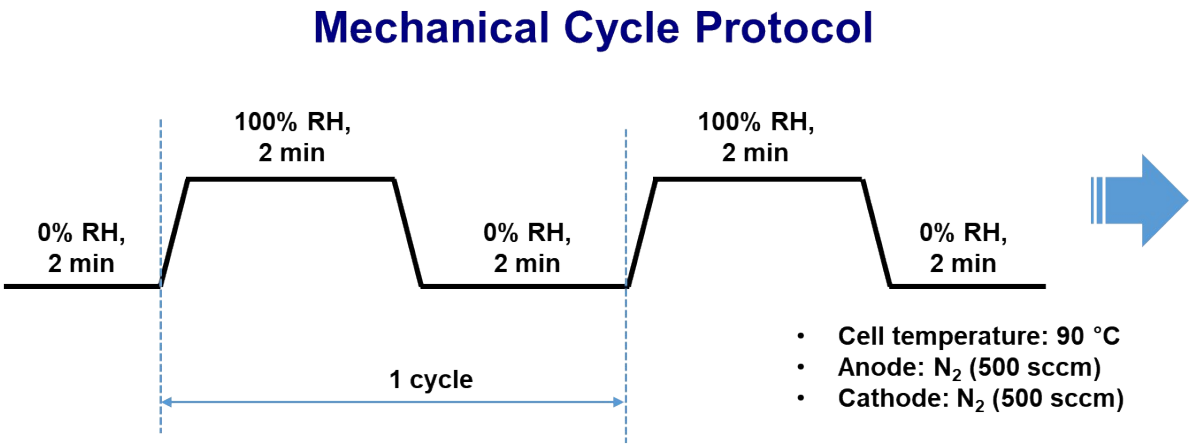

Fig. S7 Wet/dry cycling protocol with a modified DOE condition.