A clustered sulfonated poly(ether sulfone) based on a new fluorene-based bisphenol monomer

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Supplementary Information

Fuel cell lifetime test

Electrochemical durability tests were performed at a constant 0.6 V voltage load as a function of time. A comparative plot of the current density versus time for 4-SPES-38 and Nafion 212 based MEAs is shown in Figure S1. During the initial period, the current density of Nafion 212 and 4-SPES-38 samples increased because of platinum catalyst activation. Nafion 212 maintained its performance for more than 160 h, whereas the performance of 4-SPES-38 dropped significantly after 160 h. In hydrocarbon membranes, this can be attributed to possible causes which include membrane degradation of a high-IEC polymer, and well-known interfacial incompatibility issues between the non-fluorinated hydrocarbon membrane and standard Nafion catalyst binder used in MEA fabrication.

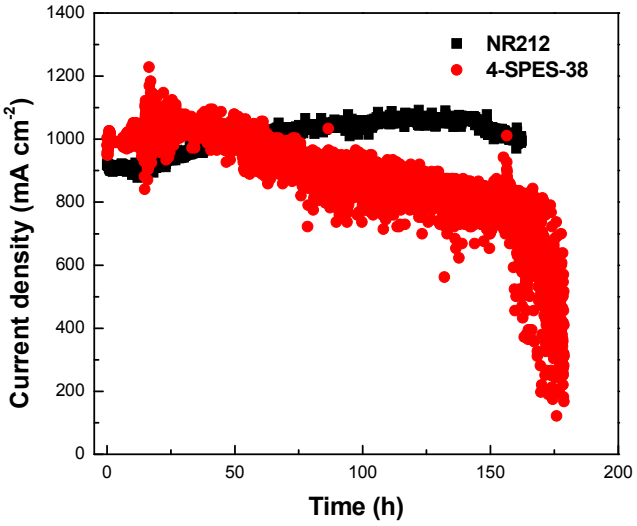

Fig. S1. A comparative plot of the current density versus time for 4-SPES-38 and Nafion 212 based MEAs.