A Comparative Study of Nafion/ZrO_2-TiO_2, Nafion/ZrO_2 and Nafion/TiO_2 Membranes for High Temperature and Low Humidity PEMFCs

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ZrO_2-TiO_2 mixed oxides with various Zr:Ti molar ratios were prepared by sol-gel method. Nafion®composite membranes with 10wt% ZrO_2-TiO_2 binary oxides were fabricated from a recast procedure using Doctor Blade technique.
These membranes were tested in a single cell at temperatures of 80 ℃ and 120 ℃ with various H_2/Air humidity conditions. The test results were compared to a Nafion /ZrO_2, Nafion/ TiO_2, commocial Nafion®112 and recast Nafion®membrane.