World Academy of Science, Engineering and Technology
International Journal of Materials and Metallurgical Engineering
Vol:8, No:8, 2014

Experimental Investigation Of Membrane Performance

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Abstract : In this study, performance of membrane was experimentally investigated. A solution having 1,5 gr Yttria-Stabilized Zirconia (YSZ)+ 10 mL methanol was prepared. This solution was taken out and filled into a spinning syringe. 6 grill-shaped wires having the sizes of 2x2 cm2'were cladded with YSZ + methanol solution by using the spinning method. After coating, the grill-shaped wires were left to dry. The dry wires were then weighed on a precision scale to determine the amount of coating imposed. The grill-shaped wires were mounted on the anode side of the PEM fuel cell membrane. Effects of the coating on the wires on current, power and resistance performances in the PEM fuel cells were determined experimentally and compared for every case. The highest current occurred at the 1st second on current #1, while the lowest current occurred at the 1171th second on current #6. The highest resistance was recorded at the 1171th second on resistance # 6, the lowest occurred at the 1st second on resistance # 1, whereas the highest power took place at the 1st second on power #1, the lowest power appeared at the 1171th second on power #5.

Keywords : membrane, electro-spinning method, Yttria-Stabilized Zirconia, fuel cells
Conference Title : ICMSE 2014 : International Conference on Materials Science and Engineering
Conference Location : Amsterdam, The Netherlands
Conference Dates : August 07-08, 2014