

Performance Improvement of The Nano-Composite Based Proton Exchange Membranes (PEMs)

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Abstract : In this study, performance of PEMs was experimentally investigated. Coating on the cathode side of the PEMs fuel cells was accomplished with the spray method by using NaCaNiBO. A solution having 0,1 gr NaCaNiBO +10 mL methanol was prepared. This solution was taken out and filled into a spray. Then the cathode side of PEMs fuel cells was cladded with NaCaNiBO by using spray method. After coating, the membrane was left out to dry for 24 hours. The PEM fuel cells were mounted to the system in single, double, triple and fourfold manner in order to spot the best performance. The performance parameter considered was the power to current ratio. The best performance was found to occur at the 300th second with the power/current ratio of 3.55 Watt/Ampere and on the fourfold parallel mounting after the coating; whereas the poorest performance took place at the 210th second, power to current ratio of 0.12 Watt/Ampere and on the twofold parallel connection after the coating.

Keywords : nano-composites, proton exchange membranes, performance improvement, fuel cell

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