

## 수소이온전도성 고분자 전해질을 이용한 고성능 DMFC 시스템

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Fuel cells are representative energy sources for portable applications and transportation. Among different types of fuel cells, direct methanol fuel cell (DMFC) takes advantages such as high energy density, elimination of fuel reforming, ease in refueling, and simplified system design. The major problem of the DMFC is an undesirable methanol crossover through the proton exchange membrane (PEM), which results in a mixed potential at the cathode with a significant loss in oxygen reduction performances as well as fuel consumption. In this present study, several DMFC systems were fabricated using perfluorinated sulfonated ionomer (PFSA) and non-perfluorinated ionomers as PEMs. The catalyst slurry with a constant chemical composition was sprayed on the PEMs. The membrane-electrode assemblies (MEAs) based on the PEMs were stacked to reach at the objective power for appropriate applications. The advanced DMFC systems containing less methanol-permeable PEM were presented as compared with typical DMFC system using PFSA membrane.