

Clean and highly efficient energy source has long been sought to solve energy and environmental problems. Fuel cells, which convert the chemical energies stored in fuel directly into electrical energy, are expected to be the key technology. In this thesis the catalytic active layers (specifically Pt, PtCo, PtNi, PtRu) for Direct methanol fuel cell (DMFC) are studied. We have evaluated PtCo as the best cathode catalysts. We have significantly reduced the amount of platinum as well as the power loss at higher concentrations of methanol. The sputtered PtCo catalyst is comparable power density in comparison with commercial Pt catalyst while the specific power per gram of platinum is several times higher. The specific power of our anode catalyst layers is comparable to reference catalysts. Our findings are useful for future improvements of the anode catalyst layer for DMFC.