

Performance of MEAs Prepared with Pt Dendrites as Electrode Catalysts

김칭희, 이현주*

연세대학교

(azhyun@yonsei.ac.kr*)

Proton exchange membrane fuel cell (PEMFC) has attracted great attention as alternative future energy sources for small portable and mobile applications. Although many efforts have been devoted to the development of PEMFCs, the commercialization of fuel cells was impeded by the high price of platinum. Also, kinetics of oxygen reduction reaction (ORR) still remains as major obstacle to the commercialization of PEMFC. To solve these problems, many researches have been focused on decreasing the amount of platinum in the catalyst while maximizing activity. In particular, dendritic shape of nanoparticles has a high surface area. Dendritic nanoparticles can reduce clogging and maintain a high surface area after long term operation without aggregation. In this work, we synthesized platinum dendrites with weakly interacting organic capping agents of tetradecyltrimethylammonium bromide (TTAB) and fabricated MEA using catalyst coated membranes (CCMs) method. The prepared Pt dendrite/C showed a high performance compared with commercial Pt/C catalysts for fuel cell test.