

Polypyrrole coated Carbon nanofiber as PEMFC cathode catalyst

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Since the discovery of the carbon nanofiber (CNFs), they have attracted much attention because of unique properties that may impact many fields of science and technology. The considerable properties of CNFs include high surface area, outstanding thermal, electrical conductivity and mechanical stability. However, uniform deposition of Pt nanoparticles on carbon surface remains inaccessible territory because of the inert carbon surface. According to this problem, we try to disperse Pt nanoparticles uniformly on Carbon nanofiber using conducting polymer. For further details, we prepared conducting polymer composite films comprised of polypyrrole (Ppy) and Carbon nanofiber (CNF) grown on Activated carbon fiber (ACF) synthesized by in situ polymerization of pyrrole on carbon nanofibers with cetyltrimethylammonium bromide (CTAB) as cationic surfactant and Ammonium persulfate as oxidizing agent. In addition, Polypyrrole coated CNF was anneal with different Temperature in Ar condition. For Pt deposition on CNFs, Polyol method was performed by microwave. The performance was measured using Proton Electrolyte Membrane Fuel Cell (PEMFC). The structure and morphology of the Pt nanoparticles on CNTs were characterized by Scanning electron Microscopy(SEM) and Transmission electron Microscopy (TEM).