Study of the carbon-supported platinum catalyst durability test in the proton exchange membrane fuel cell

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A proton exchange membrane fuel cell (PEMFC) is expected as one of the most promising technology for power sources due to their low emissions, low operating temperature, and high power density. However, despite the effort of many researchers on PEMFC, the research of catalyst durability in the membrane electrode assembly (MEA) is still insufficiently explored. In this study, the catalyst durability test was focused. The carbon support corrosion and platinum dissolution proceed as a catalyst durability test that comes up to Department of Energy (DOE) standard. The use of voltage gradually increased from 0.6V to 0.95V for 30,000 cycles to accelerate Platinum dissolution. To measure carbon support corrosion, the voltage was fixed at 1.3V for 10 hours. As a result, the PEMFC performance after the durability test was compared to before performance.