عنوان مقاله:

The Effect of Pt thin films on efficiency of the carbon based catalysts for PEM fuel cells

محل انتشار:

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خلاصه مقاله:

With increasing pollution and decrease in global reservoirs of fossil fuels, a lot of interest has been attracted to fuel cells as efficient and clean energy sources. Polymeric (membrane) fuel cells are special type of fuel cells, which can be built in small dimensions and power. These cells use hydrogen (and oxygen or air) and produce water. In these cells, platinum is used as electrode (and electro catalyst) both in anode and cathode, due to its low overvoltage for both hydrogen and oxygen. To increase the efficiency of these coatings, it is best to produce platinum particles with maximum area and it automatically leads to nanometric particles. In this thesis, platinum particles are electrodeposited first on Floride doped Tin Oxide (FTO) and then on graphite. Electro deposition is conducted via DC and pulse methods. Floride doped Tin Oxide (FTO) samples have been examined using voltametry in 0.5M H2SO4 and graphite samples have been examined in 0.5 M H2SO4 + 0.5 M CH3OH. Specific area of platinum on Floride doped Tin Oxide (FTO) substrates has been calculated. In graphite substrates, comparative analysis has been performed. Prepared samples have been examined using scanning electron microscope. For Floride doped Tin Oxide (FTO) sample, AFM test has been performed to approve the results of SEM. According to results, Platinum particles with approximate diameter of 30 nanometers have been successfully coated on Floride doped Tin Oxide (FTO) and graphite.

کلمات کلیدی:

Nanometric coating, Pulse Electrodeposition, Pt/C, Polymeric, Fuel cells