

Incorporation of Carbon Vulcan Metal Nanoparticles for Catalytic Application in Fuel Cells (PMFC)

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ABSTRACT

Currently there is great interest in finding new ways to generate clean, renewable energy aimed at environmental preservation by reducing greenhouse gas emissions such as fossil fuels. Much has been done in this field of research and one of the main focuses in the area of non-polluting energy production are called polyelectrolyte membrane fuel cells (PMFC). Metallic nanoparticles are objects of study to serve as catalysts in these cells producing electricity. Materials at the nanoscale have different physicochemical properties when compared in macro-scale due to their high surface area. These particles when embedded in ceramic or polymeric materials can provide new catalytic properties, originating functionalized materials. In this study we report the preparation of metal nanoparticles of gold, silver, copper and ruthenium and, subsequent incorporation in Vulcan carbon or carbon nanotubes. The products were characterized using spectroscopic and analytical techniques. The evaluation of catalytic activity according to the method of preparation of Vulcan carbon||metallic nanoparticles and carbon nanoTubes||metallic nanoparticles system was investigated.

Keywords: Catalysts; metal nanoparticles; carbon Vulcan; carbon nanotubes.

