

Preparation of Nano-Metal Particles on Carbon for Electrocatalytic Processing

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Carbon plays a significant role as a support material for electrocatalysts in electrochemical power sources such as fuel cells and batteries. The method of addition of the active electrocatalyst (e.g. Pt, Pt/Ru, etc) on the carbon support material vary from a direct reduction of the metal salt on support to other exotic approaches.

Environmentally, some pollutants such as chlorinated organics, have been treated using zero valent metal particles. Such metal particles can also be supported on carbon to improve adsorption. It is well known that carbon dioxide can be electrochemically reduced on copper electrode. However, we are not aware of extensive investigation on the use of nano-sized copper particles supported on carbon for electrolytic reduction of carbon dioxide. In the present work, electroless plating was used to prepare copper electrocatalyst on carbon support. The characterization and activity of Cu catalyst for carbon dioxide reduction will be used to demonstrate the method.

Figure 1 shows XRD image of copper metallized carbon particles. The details of the effect of plating conditions on the composition and microstructure of the Cu/C catalyst, and its electrochemical activity will be presented.

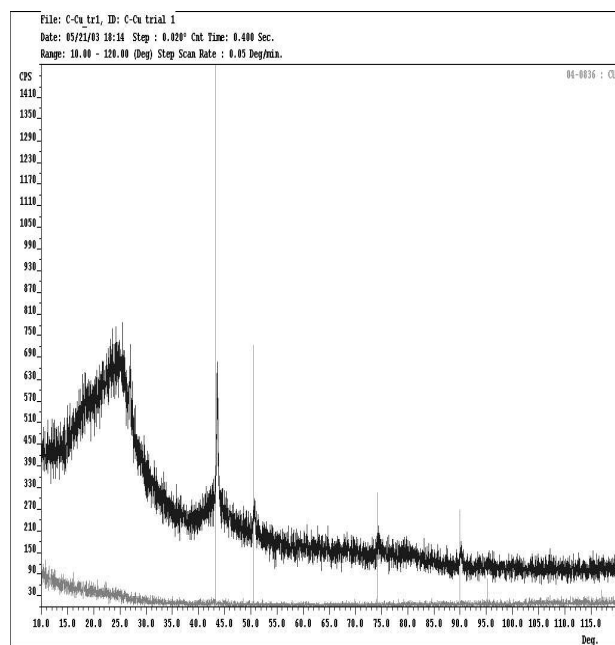


Fig. 1: XRD image of Cu/C catalyst particle prepared by electroless method (lower line indicates base or raw carbon).