Direct Methanol Fuel Cell, Phase II

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In today's world, the mass production of carbon dioxide, created by modern machines is resulting in climate change and increased ocean acidity. The purpose of this Direct Methanol Fuel Cell (DMFC) was to decrease the production of carbon dioxide while creating electrical energy. It was hypothesized that if methanol (CH3OH) and water (H2O) were input in a 1:1 ratio and catalyzed by a piece of suspended copper and aluminum, then this DMFC would generate a higher potential difference than any other catalyst tested. Aluminum, iron, and zinc were tested as anodes while copper and iron were tested as cathodes for this reaction. Copper was hypothesized to be the most efficient due to its high conductivity. Throughout the trials, the catalyst changed, yet the size and shape of each catalyst remained the same. It was hypothesized that the combination of copper and aluminum as the catalyst would produce the most energy. The hypothesis of this study was supported in stating that the DMFC would produce more electrical energy when copper and aluminum were the catalysts as the potential difference of this pair was 17.6% greater than that of copper and zinc (p=1.051e-20)

Awards Won: