Investigating the Potential of Graphene Coated Electrodes in Corrosion Prevention to Improve the Performance of Dye-Sensitized Solar Cells

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This project is to collect experimental data on the corrosion rate of copper electrodes with and without graphene coating. Graphene is a two-dimensional sheet of carbon atoms arranged in a honeycomb crystal lattice. This project is significant because corrosion of materials has been a worldwide problem and reducing the rate of corrosion will help save the properties of materials. Some of these materials are metals, batteries and dye sensitized solar cells. Dye sensitized solar cells are cells made of semi conductors which performs the process of hydrolysis in converting hydrogen atoms to energy. In this experiment, the mass and the pH level were collected during time intervals of ten minutes after connecting to 20 volts to measure the effect of the graphene on the corrosion of the copper. Data shows that the mass of these electrodes remained constant, with or without graphene. The pH level, on the other hand, increased at a different rate. The rate of the corrosion on the electrode with the graphene was slower than the corrosion on the electrode without the graphene. These findings are significant for it can provide potential into reducing the corrosion that the United States government use from taxes to pay for replacing corroded infrastructures.

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