Chlorophyll vs. Dye-Sensitized Solar Cells: Testing for the Lowest Resistance

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Purpose: The purpose of this project was to determine if chlorophyll (avocado, lemon, white pine, and yew) solar cells can produce lower resistance. Specifically, the resistance (ohms) produced using various types of chlorophyll, as compared to an unstained and a pomegranate solar cell, was measured. Procedure: A titanium dioxide solution was prepared and stored for equilibrating. Next, solar cells were prepared with two glass conductive slides. A multimeter was used to check for conductivity. The TiO2 paste was applied to the solar cell and distributed evenly. Chlorophyll was extracted from avocado, lemon, white pine, and yew leaves and applied to TiO2 slide . Slides were placed on paper towels to dry. A counter electrode was created using a flame to apply a light carbon coat. Solar cells were assembled using the stained glass slides and the counter electrode. Iodide electrolyte was applied and solar cells were placed under a greenhouse light to measure resistance; ten readings were taken on each slide for each trial. The procedures were repeated 5 times for each type of chlorophyll, pomegranate, and one unstained; averages were calculated. Conclusion: The prediction that the chlorophyll solar cells would have less resistance (ohms), than the unstained and pomegranate was correct in all cases except the solar cell with white pine. In addition, it was predicted that the lemon cell would have the least resistance. This was determined correct.

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