Dye-Sensitized Solar Cells

Mukherji, Malini

In today’s world scientists are constantly trying to discover new sources of green energy, and solar energy is a great example of this. Currently, solar cells are silicon-based. These silicon-based solar cells are quite expensive to make, so scientists have come up with the concept of dye-sensitized solar cells (DSSC). These DSSC are composed of a semiconductor called titanium dioxide, graphite, electrolyte, and most importantly, dye. Although DSSCs are not as efficient as regular silicon-based solar cells yet, they are constantly improving with the creation of stronger synthetic dyes. Some of the advantages of DSSCs over silicon-based solar cells are that they are cheaper to fabricate, they absorb more sunlight per surface area, are lightweight and flexible, and work in low light conditions. In my project I have researched a lot on how DSSCs work, created many of my own cells with natural dyes like fruits and vegetables, and arranged multiple cells in various configurations to see the effect on the voltage and current they produced.

Awards Won: