

## Low Cost Dye Sensitized Solar Cells

As today's technology grows, there is a push for more solar powered items to be available on the market. In response to this growth, a new technology at Worcester Polytechnic Institute has been developed for dye sensitized solar cells (DSSCs) that eliminates the need of the expensive platinum that is typically used. The new process employs a vacuum filtration process that uses metallic liquid crystals (LC-CNT) in carbon nanotubes to convert sunlight into electricity that improves the photovoltaic performance significantly. The DSSCs use a thin film called graphene that is a major photo-active semiconducting material in solar cells and other sustainable energy related applications. In result of this new process, the DSSCs are being made as a new type of cell where the carbon nanotubes improve the efficiency and the electrode transport. As a benefit, the DSSCs have a low cost of fabrication and utilize roll-printing methods that are already market. Once made, the DSSCs are semi-flexible and semi-transparent and, therefore, can be applied to glass-based systems. With this application to glass-based systems, there is a chance to enter the DSSCs market that is estimated to be worth \$130 million dollars by 2023. Though the solar cells are currently aimed at smaller products such as indoor and portable applications, this is a growing movement to have these DSSCs relatively inexpensive to be applied to much larger application

### Key Features

- New type of solar cell that uses carbon nanotubes to convert
- Desensitized solar cells sunlight into electricity
- Nanotube liquid crystals
- Energy conversion
- Transport of electrodes
- Low cost using fabrication methods that are readily available

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