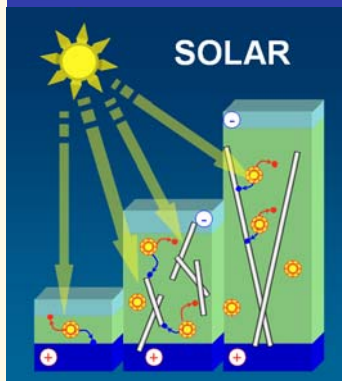
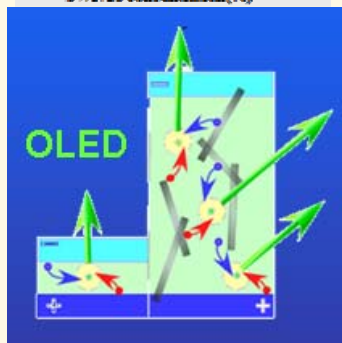
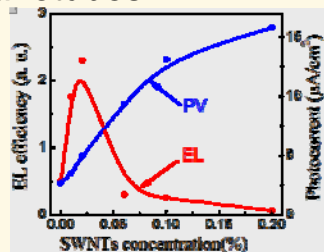


Transparent Conductive Nano-Composites

Nanomaterials for Applications Ranging From Photovoltaic Cells to Display Technologies

Tuning the properties of a conducting polymer with varying concentration of nanotubes



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Summary

Indium Tin Oxide, the most widely used commercial transparent conducting coating, has severe limitations such as inflexibility, high processing temperatures for fabrication, increasing cost of raw materials and breakability.

Scientists at ORNL have developed a conducting transparent surface made up of carbon nanotubes. These nanotubes are defect free and ultra pure single walled carbon nanotubes. The scientists have demonstrated an increase in efficiency of photovoltaic cells and light emitting diode through the mixture of these nanotubes with a conducting polymer. In addition, the properties of a semiconducting polymer can be tuned from light-emitting electroluminescent material to photovoltaic material depending on the concentration of these nanotubes in the polymer. The high tensile strength and thin interconnected membranes of these nanotubes add strength and thermal stability to a polymer; and thereby, require only a thin layer of the polymer-carbon nanotube material in devices such as LED and PV.

Advantages

- Flexible – can conform to any surface
- Thermally stable
- Compatibility with polymer processing
- Improved efficiency of the flexible electronic components (LED and PV)
- Reduced power consumption
- Enhanced organic LED operations
- Enhanced organic PV operations

Patents

- Transparent Conductive Nano-Composites (UTB ID: 1507) = [patent pending](#).


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