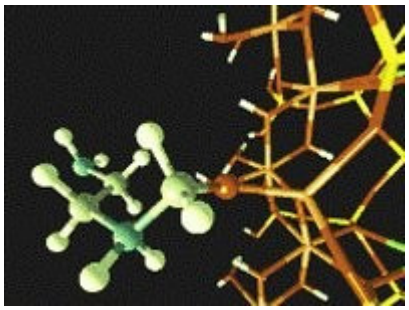
http://www.printedelectronicsworld.com, 10.05.2010



PSC's on flexible plastic substrates exceeding 5% efficiency

A team from the Thuringian Institute of Textile and Plastics Research (TITK) in Germany has fabricated a polymer solar cell (PSC) on flexible polyester substrate with 5% light power conversion efficiency.

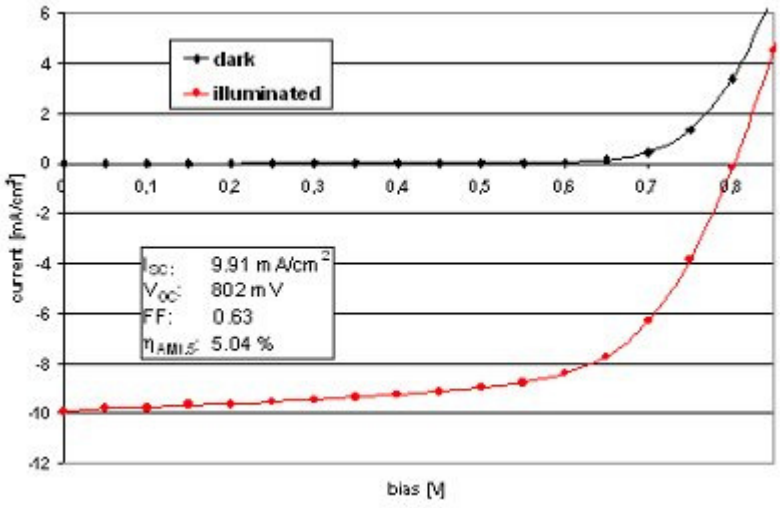
The photoactive layer of these solar cells was prepared in air by spin coating the Plexcore® PV 2000 ink of Plextronics. The PV 2000 ink is a poly (3-hexylthiophene)/bis-indene C60 based ink which enables efficiencies of nearly 6% on ITO-glass. The electrodes consist of ITO and Ca/Al. The efficiency of the best solar cell to-date is 5.04 % under AM 1.5G illumination with an active area of 0.25 cm². The cell has an open circuit voltage of 802 mV, that results from the bis-indene C60 electron-acceptor, and a high fill factor of 63%.

This efficiency, the highest reported value to-date for such flexible BHJ-PSC, is particularly remarkable in light of the reduced conductivity of ITO on foil versus glass.

These results open the way to real low-cost photovoltaics by taking advantage of low temperature and low energy consuming solution-based processing offered by reel to reel production.

In addition, with the advantages of flexibility and lightweight, a large number of potential applications can be realized.

This work was supported by the German ministry BMBF (project No. 03X3518A).



J-V-characteristic of a flexible polymer solar cell

The TITK in Rudolstadt (Germany) is a private non-profit research institute working in fields of applied materials research including functional polymer systems, smart textiles, fiber-reinforced plastics, polymer synthesis and modification and plastics processing.

The group "functional polymers and physical research" develops smart polymers and devices like polymer solar cells, field-effect transistors, actuators and electrochromics as well as laser patterning and reel-to-reel wet coating processes for up-scaling and potential mass production.

Source: TITK

For more attend : Printed Electronics & Photovoltaics USA 2010 .