

MARCH VICTORIAN BRANCH MEETING

Past, Present & Future Trends in Organic Solar Cells

Dr. Jacek Jasieniak

CSIRO, Molecular and Health Technologies

6.30pm Thursday 19 March, 2009

(Refreshments provided from 6:00 pm prior to the talk)

Hercus Theatre, David Caro (Physics) Building

University of Melbourne

In the 1950's Bell Lab scientists produced the first solar cell when they demonstrated that silicon could be used to convert the sun's light into electricity. The majority of currently available solar cells are still based on silicon. While these solar cells are now a largely established technology with high solar energy to electricity conversion efficiencies, they unfortunately suffer from high material and fabrication costs. The price of solar cells must significantly reduce for solar energy to be competitive with current fossil fuel based energy. Silicon based technologies are unlikely to reach this target due to the high cost of silicon, thus alternate non-silicon technologies such as thin film, dye-sensitized, and organic solar cells are emerging.

One member of the organic solar cell family which holds among the most promise of all these emerging technologies is based on highly light absorbing and electrically conducting polymers. Since polymers can be processed from solution and printed onto both rigid and flexible substrates, they form an ideal material for the fabrication of large area solar cells at rapid throughput. These properties allow for truly low cost solar cell production!

The aim of this talk is to introduce the listener to the concept of polymer based organic solar cells by presenting an overview of the currently accepted physics that govern their operation. This will include a discussion on how molecular engineering is applied to maximize two of the most fundamental processes necessary for the operation of these devices: (1) interfacial charge separation and (2) charge conduction. Additionally, it will highlight how device architecture must be addressed to maximize device performance. Ultimately, this presentation will give the audience an idea of what polymer based organic solar cells are, what are their limitations, and where this technology is heading.

Members are encouraged to join the speaker and members of the Branch Committee for dinner following the talk at a local restaurant. In order to assist with table reservations please contact the Honorary Secretary (email below) by Monday February 16.

Honorary Secretary

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