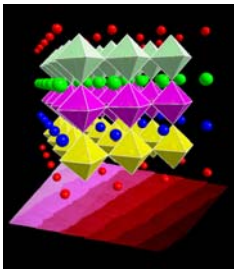
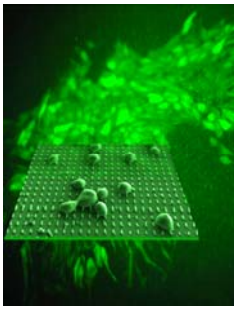
Center for Nanophase Materials Sciences (CNMS)

CNMS DISCOVERY SEMINAR SERIES

11:00 am, Tuesday, March 7, 2006
8610, L-183 (CNMS Executive Conference Room)

Refreshments will be served at 10:45 am





ORGANIC PHOTOVOLTAIC CELLS

A "Journal Club" discussion of

"High-efficiency solution processable polymer photovoltaic cells by self-organization of polymer blends"

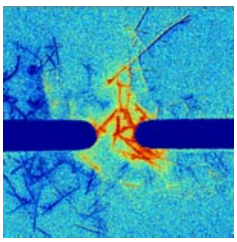
Ilia Ivanov
and
Kunlun Hong

Abstract

We will give a short introduction to photovoltaic (PV) cell design and operation, introduce the definition of a bulk heterojunction, and highlight the most critical problems faced by the organic photovoltaic (OPV) cells research community.

Then we will present a recently published *Nature Materials* paper [Ref. 1 below and attached pdf] reporting OPV cell results obtained by Prof. Yang Yang's (UCLA) research group. A remarkable power-conversion efficiency of 4.4% was demonstrated for an OPV cell based on a bulk heterojunction of poly(3-hexylthiophene) and methanofullerene.

Finally, we will initiate and moderate a discussion of how expertise in CNMS Scientific Themes as well as elsewhere at ORNL could stimulate building a new and strongly collaborative OPV research program, including discussion of special CNMS/ORNL strengths or opportunities and any specific needs. Participants are strongly encouraged to read the attached file in preparation for the seminar and discussion, and to join in extended discussion during a brown bag lunch.



References

1. (Attached) G. Li, V. Shrotriya, J. Huang, Y. Yao, T. Moriarty, K. Emery and Y. Yang *Nature Materials* **4,** 864-868 (November 2005)
2. Additional information on OPV cells can be found in the invited paper by Dennler, G., Serdar, N. Sarciftci E. "Flexible Conjugated Polymer-Based Plastic Solar Cells: From Basics to Applications," *Proc. of the IEEE*, **93**(8), 1429-1439, August 2005.

Host: Doug Lowndes, 574-6306, lowndesdh@ornl.gov

CNMS Oak Ridge National Laboratory
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