

Tuning the Energy Level Offset between Donor and Acceptor with Ferromagnetic Layers for Increased Efficiency in Bilayer Organic Photovoltaics

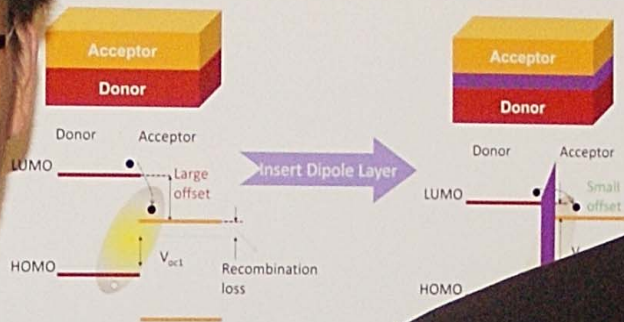
Huan, P. Sharma, S. Poddar, R. Korlacki, S. Ducharme, A. Gruverman,
Department of Mechanical and Materials Engineering
Nebraska Center for Materials and Nanoscience
University of Nebraska-Lincoln, Nebraska, United States
huang2@unl.edu Website: www.huang...

University of Nebraska
LINCOLN NEBRASKA CENTER FOR
MATERIALS AND NANOSCIENCE RESEARCH

Research motivation

Proposed mechanism

Maximum attainable V_{oc}



The V_{oc} of OPV devices is determined by the difference of the LUMO (or valence band) of the donor material. A small LUMO offset between the donor and acceptor materials leads to a small V_{oc} .

The proposed mechanism, consisting of an ultrathin ferromagnetic layer, which shifts the relative energy levels of the donor and acceptor materials, leading to a small LUMO offset between the donor and acceptor materials and to increase the efficiency.

Final results

Bin Yang
Mechanical and Materials
Engineering

