

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Synthesis and Characterization of Quinoxaline-Based Low-Bandgap Copolymers for Bulk Heterojunction Solar Cells YOONKYOO LEE, WON HO JO, Department of Materials Science and Engineering, Seoul National University — A series of low-bandgap alternating copolymers consisting of quinoxaline derivatives and electron-donating carbazole or fluorene were synthesized via the Suzuki coupling reaction. For the purpose to improve the molecular packing of polymer chains and to enhance the charge carrier mobility in the packing direction, a new quinoxaline derivative, 5,8-dithien-2-yl-dibenzophenazine which has perfectly planar polycyclic structure, was synthesized and introduced as a new building block for alternating copolymers instead of frequently-used 5,8-dithien-2-yl-2,3-diphenylquinoxaline. The use of planar quinoxaline derivative exhibited better optical, electrochemical, and structural properties of the resulting copolymers as compared to those of polymers with less planar quinoxaline derivatives. Charge transport and photovoltaic properties of these two classes of copolymers are compared and discussed.

Yoonkyoo Lee
Dept of Materials Science and Engineering, Seoul National University

Date submitted: 16 Dec 2010

Electronic form version 1.4