

DEPARTMENT OF CHEMICAL ENGINEERING

SEMINAR

THURSDAY, October 24, 2013

3:30 PM – E6-2024

(coffee and donuts served at 3:20 PM)

“Development of Soluble *donor-acceptor* Small Molecules for use in Organic Solar Cells”

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ABSTRACT

Solution processed organic photovoltaic devices (OPVs) have emerged as a promising energy technology due to their ease of fabrication, potential to enable low-cost manufacturing, and ability to be incorporated onto light-weight flexible substrates. The most successful class of OPV devices are those with active layers composed of blended polymeric electron donor and fullerene acceptor, widely known as bulk heterojunction (BHJ) solar cells. Such solar cells have achieved power conversion efficiencies (PCE) as high as 10%. Recently, organic donor-acceptor based small molecules have emerged as promising materials to replace both polymeric donors and fullerene acceptors in the active layer of OPVs. This talk will discuss the development of small molecule donors with ideal properties for use in OPVs that have led to cells with PCE > 8% and our recent efforts to developed non-fullerene acceptors.

Biosketch:

Gregory C. Welch is an Assistant Professor of Chemistry and Canada Research Chair at Dalhousie University in Halifax, Nova Scotia. He obtained a B.Sc. in Chemistry from the University of Calgary in 2003 and worked in the laboratories of Tristram Chivers and Warren E. Piers. Gregory earned his Ph.D. at University of Windsor in 2008 under the supervision of Douglas W. Stephan. At Windsor, Greg discovered the chemistry of Frustrated Lewis Pairs. He then moved to UC-Santa Barbara, where he worked as an NSERC postdoctoral fellow with Guillermo C. Bazan in the area of organic solar cells. His current research interests focus in the area of Printed Electronics, where he is developing new functional materials.