

"Comparing the Primary Electron Transfer Process in Organic Photovoltaic Heterojunctions with Photosynthetic Reaction Centers"



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Abstract This presentation will focus on some of the fundamental science associated with the rapidly emerging field of organic photovoltaics (OPV). It will include a discussion of how the OPV field is evolving, examine some of the fundamental scientific issues that underpin the subject, and will discuss how spectroscopy can help to understand these issues. The goal is to enable both a better understanding of how these systems function and consequently help to advance solar energy conversion efficiencies of future OPV devices. So-called organic photovoltaic devices have seen certified power conversion efficiencies increase from 2.5% in 2001 to ~9% in 2011. Close inspection of the strategies employed to realize this impressive improvement in performance reveal a common approach of synthesizing new donor polymers, fullerene acceptors and, in some cases, new device architectures. It is questionable as to whether this approach will result in a similar four-fold level of improvement over the next ten years. And it is this question that motivates the work that will be described.

Bio Garry received his B.Sc (hons) in Chemistry with Electronics at the University of Southampton, United Kingdom in 1980 and his Ph.D in Molecular Photochemistry at the University of London, United Kingdom in 1984. Currently, he is a NREL Fellow in the Chemical and Material Science Center at the National Renewable Energy Laboratory in Golden, Colorado as well as Professor Adjoint in the Department of Chemistry and Biochemistry at the University of Colorado, Boulder, Colorado. His research interest is in next generation solar photoconversion concepts based on conjugated molecules and polymers combined and nanostructured species, with a focus on the fundamental photophysics of exciton dynamics and charge generation and recombination kinetics.

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