

The Department of Chemistry and Biochemistry

Seminar Series

Presents a Seminar Titled:

***“Organic Photovoltaics: A Potential Cost Effective,
Renewable, and Clean Energy Alternative”***



Presented By

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Sunlight is perhaps the most abundant, renewable, and clean energy source on surface of the earth. In 2004, for instance, worldwide energy consumption was less than 20 Terawatts, yet sunlight provides over 160,000 Terawatts to the surface of the earth. Though commercially available inorganic materials based solar cells typically have photoelectric power conversion efficiencies of over 15%, the technology is still too costly for popular and general energy usage. Future organic and/or ‘plastic’ materials based solar cells appear very attractive for solar energy conversion applications where low cost, lightweight, and flexible shape are desired [1-2]. The photoelectric power conversion efficiencies of current organic/polymer photovoltaic materials are still relatively low, but there are rooms for improvements. This presentation will provide a brief overview on the background, mechanisms, current status, problems, and future prospective of the organic and polymeric photovoltaics. A number of key approaches including approaches pursued at the presenter’s lab will also be presented [3-7].

1. Sun, S. and Sariciftci, S., eds., *Organic Photovoltaics: Mechanisms, Materials and Devices*, CRC Press, Boca Raton, Florida, **2005**.
2. Sun, S. and O’Neill, H., “Chapter 16: Sunlight Energy Conversion via Organics”, in *Handbook of Photovoltaic Science and Engineering*, 2nd edition, Luque, A and Hegedus, S., eds., John Wiley and Sons, Ltd., the Atrium, England, pp 675-715, **2011**.
3. Sun, S., Zhang, C. Choi, S.; Ledbetter, A.; Bonner, C.; Drees, M.; Sariciftci, S., *Appl. Phys. Lett.*, **2007**, *90*, 043117.
4. Zhang, C.; Nguyen, T.; Sun, J.; Li, R.; Black, S.; Bonner, C.; Sun, S.; *Macromolecules*, **2009**, *42*, 663-670.
5. Sun, S.; Zhang, C.; Li, R.; Nguyen, T.; David, T.; Brooks, J., *Sol. Energy Mater. Sol. Cells*, **2012**, *97*, 150–156.
6. Sun, S.; Brook, J.; Nguyen, T.; Zhang, C., *J. Poly. Sci. A, Poly. Chem.*, **2014**, *52*, 1149-1160.

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