Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Nanocrystal-based Dyads for Solar to Electric Energy Conversion.[1] LEI WANG, MINGYAN WU, DAVID WALDECK, University of Pittsburgh — We describe a new project which aims to develop a systematic and modular approach to creating a new generation of Gratzel-inspired solar energy conversion devices with the following novel advantages: the ability to capture the entire available range of solar irradiance by employing sets of linked nanoparticles, fabrication by self-assembly, enhanced robustness, and lowered cost through use of nanostructured, rather than molecular, charge transfer elements. The project team is designing, creating, and characterizing linked-nanoparticle dyads, which will act as the charge separation "engine" in new generation solar cells. By employing a mixture of dyads it should be possible to efficiently capture the entire solar spectrum. The proposed device architecture has two important advantages over existing solar conversion devices: It can be produced by a self-assembly process. Because of its modularity, each of its components (nanoparticles or organic linker) can be optimized separately.

[1]This work is supported by the U.S. Department of Energy, Solar Energy Utilization Initiative

Lei Wang
University of Pittsburgh

Date submitted: 20 Nov 2008 Electronic form version 1.4