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**TIP Project Brief – 100095/11H010**

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**Manufacturing****Novel Nanomaterial Synthesis Processes to Enable Large-Scale, High-Performance, Flexible Solar Module Manufacturing in the U.S.**

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*Develop novel processes for manufacturing organic photovoltaic materials to enable large-scale manufacturing of high-performance, flexible solar-energy modules.*

**Sponsor: Polyera Corporation**

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- Project Performance Period: 2/1/2011 - 1/31/2013
- Total project (est.): \$4,953 K
- Requested TIP funds: \$2,051 K

Thin-film organic photovoltaic (OPV) materials have the potential to bring the promise of low-cost, ubiquitous solar power to fruition while reinvigorating U.S.-based manufacturing and construction. Polyera has developed a class of semiconductor materials with the potential to reach ten percent power-conversion efficiencies (PCEs), the level needed to enable solar modules competitive with other technologies on a cost-per-watt basis. It proposes to develop cost-effective, high-yield synthetic methods to enable the large-scale manufacturing of these materials. The project will develop and evaluate novel synthetic routes for making the fundamental building block. It also will examine the potential of a highly-novel polymerization method—never before used in the industry—to better control the photoactive layer polymer architecture at the nanoscale. Compared with traditional polymerization methods, this new approach offers the advantages of reduced complexity and greater control over molecular weight and polydispersity, ultimately leading to higher-yield, lower-cost, and higher-performance polymer production, thus optimizing device performance.

Polyera will work with third parties to scale-up the process first to pilot levels and then to commercial scale volumes, while ensuring that the material performs adequately and is suitable for solar modules. Having reliable, cost-effective production of high-efficiency, easy-to-process photoactive materials would drive down solar module manufacturing and installation costs, create new sectors for U.S. manufacturing in a market with global demand, and provide cost-effective, renewable energy on a much larger scale.

**For project information:**

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