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Material from Sumitomo Chemical Employed in UCLA's Tandem Polymer Photovoltaic Cell Achieving Power Conversion Efficiency of 10.6%

A polymer photovoltaic cell produced by Professor Yang Yang at the University of California, Los Angeles (UCLA) that employs a material developed by Sumitomo Chemical has achieved a power conversion efficiency of 10.6%, as certified by the U.S. Department of Energy's National Renewable Energy Laboratory (NREL). NREL, the U.S. Department of Energy's primary national laboratory for renewable energy and energy efficiency research and development, is one of the few institutions in the world capable of evaluating and officially certifying the performance of solar cells. The efficiency of 10.6% ranks the world's top level among polymer photovoltaic cells that are available at the moment.

Because of their lightweight, thin and flexible nature, polymer photovoltaic cells are expected to play a significant role in the development of the next generation solar cell technology. With a special printing process, large surface area cells can be manufactured in quick succession, which, in turn, is expected to attain lower production cost in comparison to silicon solar cells that are currently the dominant technology in use.

The newly-developed polymer photovoltaic cell employs a tandem cell architecture, which, by bringing together two photoelectric conversion layers with different absorption bands, enables a broader spectrum of solar energy to be utilized, thereby delivering higher conversion efficiency compared to single-layer solar cells. On the other hand, the performance of the polymer photovoltaic cell considerably depends on the combination of the materials with different absorption bands as well as the material used as an interlayer. The power conversion efficiency of 10.6% has been achieved by combining a short-wavelength absorption material and an interlayer material capable of minimizing electrical loss, that were developed by UCLA, with a highly-efficient long-wavelength absorption material developed by Sumitomo Chemical.

Sumitomo Chemical is promoting the development of polymer photovoltaic cells by capitalizing on the polymer organic light emitting diode (PLED)-related technology for displays and lighting applications that the Company has been working on vigorously for commercialization. In each of PLEDs and polymer photovoltaic cells, conjugated polymer (*) holds the key to greater materials efficiency. As the Company engages in this

undertaking, it has the distinctive advantage of its superior expertise to utilize the polymer material design and synthesis technologies the Company has long cultivated through the development of PLED materials and devices. When the Company is to manufacture polymer photovoltaic cells in large quantity in the future, the PLED material production facilities it owns will offer another great advantage.

Going forward, Sumitomo Chemical will further strengthen development of enhanced-performance materials, while working with UCLA and building on its own technological strength. The Company seeks to bring its high-conversion efficiency for polymer photovoltaic cells to a commercially viable level as early as possible. By leveraging the specific advantages of polymer photovoltaic cells, the Company will initially target such applications as battery chargers for mobile devices, including mobile phones and notebook PCs, or those products that are integrated into indoor walls or transparent windowpanes. In the future, the Company will aim to expand the applications to include such fields as household rooftops and power generation for industrial use by further improving conversion efficiency and durability of the cells.

(*) Conjugated polymer: A polymer with alternating single and double bonds. In addition to being organic, conjugated polymers exhibit conductivity.