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UNIVERSITY OF CENTRAL FLORIDA RESEARCHERS CONFIRM BATTERY BREAKTHROUGH DEVELOPED BY PLANAR ENERGY

Tests validate company's findings demonstrating cost savings, materials and efficiency advantages that could take automotive industry a step closer to practical electric vehicles

ORLANDO, FLA., March 1, 2010 – Researchers at the University of Central Florida's (UCF) Advanced Materials Processing and Analysis Center (AMPAC)) have verified findings by Planar Energy that could lead to dramatic cost and performance improvements in large format batteries required for practical electric vehicles.

"AMPAC scientists independently confirmed that Planar Energy's new generation of solid state electrolytes have ionic conductivity metrics comparable to liquid electrolytes used in traditional chemical batteries," said Dr. M.J. Soileau, a UCF professor of optics, electrical & computer engineering and physics, who is the university's vice president for research & commercialization.

"This fundamental materials breakthrough, coupled with our proprietary low-cost manufacturing process, will render traditional chemical batteries obsolete," declared Scott Faris, president and CEO of Planar Energy.

"It will allow solid state battery fabrication that will enable manufacturers to increase their capacity by 200-to-300 percent, while reducing costs more than 50 percent," he continued. "This is what the automotive industry needs to make electric vehicles practical and affordable."

Members of Planar Energy's research team conducted early work in solutions-based materials deposition at the former Bell Labs research center in Orlando, work that was continued at UCF focused in the field of low-cost solar films. Planar Energy has been working with UCF researchers on two Florida High Tech Corridor Council (FHTCC) matching grants to develop its technology.

"We recognized the potential for making better batteries and funded additional research for energy-storage materials," said Faris. "The underlying technology that enabled our materials breakthrough allows for the direct printing and growth of self-assembling films. Our technology overcomes the key technical barriers that have rendered solution-based processing impractical."

"Our partnership with UCF and the FHTCC has enabled us to validate what our team at Planar Energy had previously concluded: that we can cut the cost of manufacturing a battery by 75 percent while creating efficiency and storage-capacity improvements two or three times greater than conventional processes, most notably those involving lithium-ion."

Following are highlights of key test results:

- Planar Energy has identified a new class of solid state electrolytes that have conductivity of 10-4 in measured samples and 10-3 in functional battery calculations. The conductivity ranges displayed allow for high-rate batteries required in automotive applications.
- Planar Energy's solid state electrolyte materials are deposited – stacked – as thin films directly on active layers in the battery, eliminating the historic process of having to deposit films on separate substrates and then mechanically joining them.
- Planar Energy's electrolytes demonstrate the same performance level of *liquid* electrolytes currently used by the lithium-ion industry, but they are in a solid form factor.
- Planar Energy's change in form factor greatly simplifies the battery manufacturing process and enables existing battery chemistries to function at 95 percent of their theoretical value.
- Planar Energy's batteries will be intrinsically safe, allowing customers to further reduce packaging requirements, as well as simplify the battery management system.
- Planar Energy's batteries have virtually no self discharge, allowing them to sit for long periods of time while retaining their charge. Traditional lithium-ion batteries have high discharge rates that are problematic for automotive applications.

Planar Energy is at showcasing the U.S. Department of Energy's ARPA-E Energy Innovation Summt 2010, March 1-2, at booth #336.

About the UCF Advanced Materials Processing and Analysis Center (AMPAC)
AMPAC is an interdisciplinary research and education center for materials science and engineering, established in 1998. The center and its faculty have been the recipients of prestigious awards and accolades, and collaborations with other universities, government agencies and private industry are actively sought and effectively executed, generating millions in research funding. Its two facilities are available to all researchers at UCF and from outside companies, government labs and universities, enabling them to perform cutting-edge research, and to train and educate students and other personnel in the use of state-of-the-art equipment. UCF's capabilities in developing advanced semiconductor materials and characterization technologies enable companies, such as Planar Energy, to access world-class tools. The research was conducted under the direction of UCF Professor Dr. Sudipta Seal, director of AMPAC and NanoInitiative Coordinator. UCF, in partnership with its 14-year-old economic development initiative— the **Florida High Tech Corridor Council**—has supported Planar Energy from its formation, making available facilities, graduate researchers and research faculty.

About Planar Energy
Planar Energy, the developer of large-format, solid state batteries at half the cost and triple the performance of lithium-ion batteries, was founded in Orlando, Fla., in 2007. It was spun out of the U.S. Department of Energy's National Renewable Energy Laboratory in Golden, Colo., by Princeton, N.J.-based Battelle Ventures and its Knoxville, Tenn.-based affiliate fund, Innovation Valley Partners (IVP). In 2008 Planar Energy identified a new deposition technology, Streaming Protocol for Electroless Electrochemical Deposition, or SPEED, a high speed roll-to-roll deposition process that is dramatically more flexible and scalable than existing methods, allowing Planar Energy to overcome production barriers to low-cost solid state batteries. SPEED was developed by Dr. Isaiah Oladeji, a semiconductor materials researcher that came from Bell Labs, who is now senior research scientist at Planar Energy. For more information, visit www.planarenergy.com

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