Argonne NATIONAL LABORATORY

News Release

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FOR IMMEDIATE RELEASE

New "Layered-Layered" Materials for Rechargeable Lithium Batteries

ARGONNE, Ill., (May 08, 2007) – Researchers at the Department of Energy's Argonne National Laboratory have developed a new approach to increasing the capacity and stability of rechargeable lithium-ion batteries.

The technology is based on a new material for the positive electrode that is comprised of a unique nano-crystalline, layered-composite structure.

Argonne's strategy uses a two-component "composite" structure -- an active component that provides for charge storage is embedded in an inactive component that stabilizes the structure.

Details of the new developments will be presented on Tuesday, May 8 at the 211th Meeting of The Electrochemical Society, being held in Chicago, May 6-10.

In recent tests, the new materials yielded exceptionally high charge-storage capacities, greater than 250 mAh/g, or more than twice the capacity of materials in conventional rechargeable lithium batteries. Theories explaining the high capacity of these manganese-rich electrodes and their stability upon charge/discharge cycling will be discussed at the Electrochemical Society meeting.

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In addition, by focusing on manganese-rich systems, instead of the more expensive cobalt and nickel versions of lithium batteries, overall battery cost is reduced.

Rechargeable lithium-ion batteries which would incorporate the new materials with increased capacity and enhanced stability could be expected to be used in a diverse range of applications, from consumer electronics such as cell phones and laptop computers, to cordless tools and medical devices such as cardiac pacemakers and defibrillators. In larger batteries, the technology could be used in the next generation of hybrid electric vehicles and plug-in hybrid electric vehicles.

The presentation on "Anomalous Capacity and Cycling Stability of Layered-Layered Electrodes in Lithium Batteries" by Argonne researchers Chris Johnson, Naichao Li, Christina Lefief, Jeom-Soo Kim, Jeremy Kropf, John Vaughey, and Michael Thackeray, will be given by Chris Johnson.

Funding for the work was provided by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy FreedomCAR and Vehicle Technologies Program.

The nation's first national laboratory, Argonne National Laboratory conducts basic and applied scientific research across a wide spectrum of disciplines, ranging from high-energy physics to climatology and biotechnology. Since 1990, Argonne has worked with more than 600 companies and numerous federal agencies and other organizations to help advance America's scientific leadership and prepare the nation for the future. Argonne is managed by UChicago Argonne, LLC for the U.S. Department of Energy's Office of Science.

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