Argonne NATIONAL LABORATORY

News Release

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For immediate release

Argonne's lithium-ion battery technology to be commercialized by Japan's Toda Kogyo

Patented cathode materials result in longer-lasting, safer batteries for cars, phones, computers

ARGONNE, Ill. (March 13, 2008) – The U.S. Department of Energy's Argonne National Laboratory and Toda Kogyo Corp. of Japan have reached a world-wide licensing agreement for the commercial production and sales of Argonne's patented composite cathode materials for lithium-ion batteries, which result in longer-lasting, safer batteries for hybrid-electric vehicles, cell phones, laptop computers and other applications.

"Our agreement with Toda Kogyo is an important step toward bringing to market key advanced lithium-ion battery technologies that are being developed here at Argonne with funding from the U.S. Department of Energy," Gary Henriksen, Manager of the Electrochemical Energy Storage Department at Argonne, said. "The technologies being licensed will enhance the performance, life and inherent safety of lithium-ion cells compared to those that employ the cobalt-based cathode technology that has dominated the market since the introduction of lithium-ion batteries in 1990."

The family of structurally integrated composite cathode materials being licensed uses a new combination of lithium/manganese mixed metal oxides in a revolutionary materials-design approach to extend the time between charges, increase calendar life and improve lithium-ion cell safety.

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The new cathode materials are comprised of a composite matrix using an inherently stable inactive lithium-metal oxide that is integrated with a highly active form of another lithium-metal oxide component. This composite allows for greater levels of lithium to be used, while reducing oxygen-induced side reactions at the electrode surface that limit cell life and safety. The enhanced stability of these materials allows the system to be charged to higher voltages, leading to a significantly higher energy storage capacity than currently available materials through both the higher voltage and higher capacity per unit weight of active material.

This cathode technology is part of a large and diverse portfolio of lithium-ion battery inventions and patents developed at Argonne. Funded primarily by DOE's Vehicle Technologies Program, the scientists and engineers at Argonne have developed numerous technologies for improving the life, safety and performance of lithium-ion batteries, including several types of more stable advanced cathode and anode materials for higher power or higher energy storage applications and electrolyte systems that further stabilize the electrode/electrolyte interfaces.

"We are very enthusiastic about the impact of Toda's commitment to manufacture and market these technologies through the license," Steve Ban, director of Argonne's Office of Technology Transfer, said. "We believe the near-term commercial use of these materials and other battery technologies developed at Argonne will provide broad benefits to users of batteries containing the advanced materials and prove the value of closely linking research in basic battery science to applied R&D efforts in the area, as is the approach here at Argonne."

This licensing agreement is integral to DOE's commercialization efforts, which includes a full spectrum of activities required to rapidly move a new technology, product, or process from its conceptual stage to the marketplace.

With over 180 years of experience manufacturing and supplying high-performance materials in various markets, Toda Kogyo Corp. has established itself as a respected supplier of materials in the lithium ion and nickel-metal hydride battery markets.

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"We are eager to expand our existing battery material product portfolio with Argonne's technology, and happy to do so through this agreement," said Andy Jazdanian, Manager of Toda America Inc., based in Schaumberg, Illinois. Kenji Ogisu, President of Toda Kogyo's internal Energy Solutions Company, added, "We believe the high-capacity NMC (lithiated nickel-manganese-cobalt oxide) technology we are commercializing are the materials of the future, that will solve many of the performance issues we see today in lithium-ion batteries."

In addition to plants in Japan, Toda recently acquired a plant in the Detroit area that will help Toda serve U.S. automobile manufacturers. Toda Advanced Materials Inc. in Sarnia, Ontario, Canada produces cathode materials and their precursors for lithium-ion and nickel metal hydride batteries with a combined annual production capacity of 4,000 metric tons.

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