

## ***Worldwide Nanotechnology Thin Film Lithium-Ion Battery -- Markets Reach \$9 Billion By 2015***

LEXINGTON, Massachusetts (January 7, 2009) – WinterGreen Research announces that it has a new study on Worldwide nanotechnology thin film lithium-ion battery markets. The 2009 study has 412 pages, 112 Tables and Figures. Worldwide Nanotechnology lithium-ion batteries are poised to achieve significant growth as units become smaller and less expensive broadening the types of energy applications in which they are included.

Worldwide nanotechnology thin film lithium-ion batteries are poised to achieve significant growth as units become more able to achieve deliver of power to electric vehicles efficiently. Less expensive lithium-ion batteries allow leveraging economies of scale and proliferation of devices into a wide range of applications. According to Susan Eustis, lead author of the study, “Economies of scale leverage the lithium-ion battery nanotechnology advances needed to make lithium-ion batteries competitive. Nanotechnology provided by lithium-ion research solves the issues poised by the need to store renewable energy. Lithium-ion batteries switch price reductions are poised to drive market adoption by making units affordable.”

Nanotechnology results obtained in the laboratory are being translated into commercial products. The processes of translating the nanotechnology science into thin film lithium ion batteries are anticipated to be ongoing. The breakthroughs of science in the laboratory have only begun to be translated into life outside the lab, with a long way to go in improving the functioning of the lithium-ion batteries. Unlike any other battery technology, thin film solid-state batteries show very high cycle life. Using very thin cathodes (0.05µm) batteries have been cycled in excess of 45,000 cycles with very limited loss in capacity. After 45,000 cycles, 95% of the original capacity remained.

Then there is the problem of translating the evolving technology into manufacturing process. What this means is that the market will be very dynamic, with the market leaders continuously being challenged by innovators, large and small that develop more cost efficient units. Systems integration and manufacturing capabilities have developed a broad family of high-power lithium-ion batteries and battery systems. A family of battery products, combined with strategic partner relationships in the transportation,



Copyright 2009 WinterGreen Research, Inc.

-Page 1-

WinterGreen Research, Inc.

6 Raymond St.

Lexington, MA 02421

(781) 863-5078

[www.wintergreenresearch.com](http://www.wintergreenresearch.com)

electric grid services and portable power markets, position vendors to address these markets for lithium-ion batteries.

Electric Vehicles depend on design, development, manufacture, and support of advanced, rechargeable lithium-ion batteries. Batteries provide a combination of power, safety and life. Next-generation energy storage solutions are evolving as commercially available batteries. Lithium-ion batteries will play an increasingly important role in facilitating a shift toward cleaner forms of energy.

Innovative approaches to materials science and battery engineering are available from a large number of very significant companies -- GE, Panasonic Sanyo / Matsushita Industrial Co., Ltd., NEC, Saft, Toshiba, BYD / Berkshire Hathaway, LG Chem, Altair Nanotechnologies, Samsung, Sony, A123 Systems with MIT technology, and Altair Nanotechnologies.

Markets for lithium-ion batteries at \$911 million in 2008 are anticipated to reach \$9.1 billion by 2015, growing in response to decreases in unit costs and increases. Lithium-ion batteries used in cell phones and PCs, and in cordless power tools are proving the technology. Units are shipped into military markets and are used in satellites, proving the feasibility of systems. Small, lithium-ion prismatic batteries prove the feasibility of this technology. The large emerging markets are for hybrid and electric vehicles powered by renewable energy systems.

WinterGreen Research is an independent research organization funded by the sale of market research studies all over the world and by the implementation of ROI models that are used to calculate the total cost of ownership of equipment, services, and software. The company has 35 distributors worldwide, including Thompson Financial.

*Contact:*

**Susan Eustis, President and Co-Author**  
WinterGreen Research  
6 Raymond St.  
Lexington, MA 02421

(781) 863-5078 (Work)  
(617) 852-7876 (Cell)

[susan@wintergreenresearch.com](mailto:susan@wintergreenresearch.com)  
[www.wintergreenresearch.com](http://www.wintergreenresearch.com)



Copyright 2009 WinterGreen Research, Inc.

-Page 2-



**Copyright 2009 WinterGreen Research, Inc.**

**-Page 3-**

WinterGreen Research, Inc.  
6 Raymond St.  
Lexington, MA 02421  
(781) 863-5078  
[www.wintergreenresearch.com](http://www.wintergreenresearch.com)