

INVITED SEMINAR

LG Chem's Lithium-ion Polymer Technology for Vehicle Applications

- Speaker : **Dr. Seungdon Choi**, Battery R&D, LG Chem Research Park
- Host : Department of Energy Systems Engineering
- Date : **17:00~18:00, Thursday, May 31, 2012**
- Place : Room 301, Building 2, DGIST
- Abstract

As Li-ion batteries have been used in vehicle applications and the capacities of single cell and a pack increase, the importance of form factor of a cell becomes higher and higher. There are 3 different types of Li-ion cells widely being used in portable electronics, which are cylindrical, prismatic, and polymer. Cylindrical cells represented by 18650 are widely used in note PCs due to its high energy density and manufacturing readiness. Prismatic and polymer cells are used in cellular phones due to thin thickness. However, when cells are considered to be made in larger capacity and to be used in automotive applications at high current such as 150 A, there are additional criteria should be considered for selecting battery form factor.

Comparing 3 types of form factors based on performance, abuse tolerance, reliability, manufacturing easiness and uniformity, quality control, and thermal management, LG Chem has decided to go with polymer cells for large capacity cells for automotive applications due to the following reasons. 1) Abuse tolerance, especially explosion-free nature: When cells are exposed to hot condition such as 200 oC or put into a flame, there is no flying object from cells in case of polymer cells different from can type cells. 2) Thermal management: Since only polymer type can allow large surface area and thin thickness, heat dissipation is quite faster than especially cylindrical cells. In addition, temperature within a polymer cell is more uniform than other types. 3) Manufacturing easiness and quality control: There are only 2 components except for electrode assembly, terminal lead and aluminum laminated packaging sheet comparing to complicate current collecting component of can type cells.

Finally LG Chem's Li-ion polymer cells showing superior abuse tolerance and long enough cycle life with good manufacturability have been equipped in hybrid electric vehicles in Korean domestic market and will be shown in US market this year.

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