

# Li Secondary Battery Key Patent Analysis : Separator Coating and Surface Treatment

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## Abstracts

Drawing attention as one of main components of EVs as well as small batteries for IT devices and also aiming at the ESS market as well

This report is intended to provide information about patent trends on 'separator coating and surface modification' among technologies for secondary battery separators to related companies and research institutes.

Polyolefin-based separators are the most widely used commercial separators. However, the demand for high capacity and output batteries are gradually increasing, which brings about increasing concern about battery safety. In terms of battery safety, polyolefin-based separators, which show severe thermal contraction at high temperature and physical vulnerability, cause a lot of problems. High temperature storage and overcharge of batteries are highly related to thermal stability of separators, and battery safety issues caused by nail penetration and impurities are related to the mechanical properties of separators.

Meanwhile, the issue of wettability with electrolytes is getting serious, as batteries become bigger. In addition, the demand for low-cost batteries is also increasing, as application to electric vehicles is on the track. Considering that separators account for a large portion of the production cost of EV batteries, there is urgent need to solve this problem as well as other technical issues. Thus, there has recently been active effort to solve a lot of problems of existing polyolefin-based separators. This report covers patents on surface modification of separators, which are being developed to improve ceramic composite technologies and affinity with electrolytes.

Among patents that have been filed in Korea, the United States, Japan, and Europe

from January 1, 1990 to June 30, 2012, total 1,185 patents were selected, from which 218 effective patents were extracted. Those patents were classified into two categories, coating and surface modification, and then sub-divided into inorganic matters, polymers, and composites for analysis.

In particular, this report on separator patent analysis provides in-depth research and survey of patent disputes over separators between companies.

### **Strong Points of the report**

Specialized patent analysis on separator coating and surface modification for lithium secondary batteries

In-depth analysis of patent disputes

General and in-depth analysis of key patents

Analysis of summaries of key patents

An list of effective patents (Excel file)

(\*You can get a discount on this file by purchasing the report)

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