

Theme: Next Generation Battery

- Sub Theme: Safety-enhanced Battery based on LIB Chemistry

With the increasing operating voltage and energy density of lithium-ion batteries (LIBs), the safety of LIBs, which is guaranteed to be a sufficient level, has become one of the most interesting issues. This is because degradation resulting from long-term use, storage, overcharge, thermal shock, electrical short, and external shocks such as bending and compression can lead to ignition, combustion, and explosion in sequence. Commonly, the safety of LIBs is strongly related to internal combustion components such as electrolytes and electrodes. In order to enhance battery safety, most industrial players and researchers have focused on developing flame-retardant and nonflammable separators or introducing nonflammable additives to the electrolyte.

On the other hand, we aim to find an innovative material design or cell structure (not all-solid-state batteries) to improve battery safety.

The topics we pursue through this GRO are as follows:

- A new material or cell structure design for the improvement of safety
: Minimum energy density loss <2% or less feature
- Safety characteristics
 - 1) External shock: bending & unfolding, nail penetration, and impact of cell
 - 2) Suppression of cell-to-cell heat propagation
(Especially in the case of EV cells)

※ Topics are not limited to the above examples, and participants are encouraged to propose original ideas.

※ Funding: Up to USD 150,000 per year