



Related Domains ▶

## Provision of Electrode Materials that Contribute to Improving the Performance of Lithium Ion Secondary Batteries

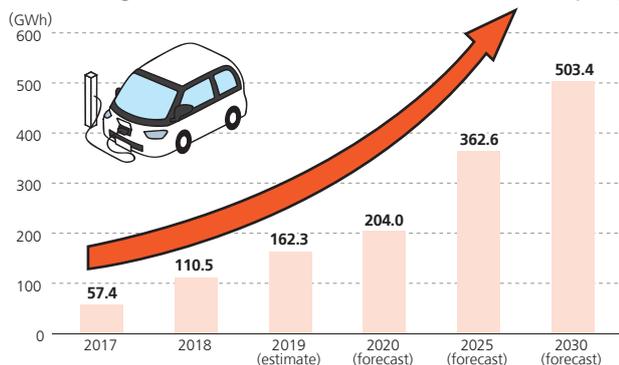


### Social Issues

The vast amount of CO<sub>2</sub> that is emitted from more than 1.3 billion vehicles all over the world has been a large contributor to global warming. Therefore, reduction of the environmental impact of traffic and transportation systems has been an urgent task. Demand for hybrid vehicles and electric vehicles (EVs) powered by a lithium ion secondary battery (LiB), which features high voltage and large capacity, has been growing rapidly because these vehicles emit much less CO<sub>2</sub> than fossil-fuel vehicles while operating. The demand is expected to continue growing significantly.

In addition, LiB will be a new linchpin for the power infrastructure in a decarbonized society. For example, it will be used for power storage systems that achieve stable power supply from solar power plants and wind power plants. Therefore, a further increase in capacity, lighter weight, and higher level of safety and durability are required of LiB.

#### Size of the global market of automotive LiB (in terms of capacity)



Source: Yano Research Institute Ltd., Global Automotive Lithium-ion Battery Market: Key Research Findings 2019 (announced on October 21, 2019)

### Value Provision by the Toyo Ink Group

#### Contributing to performance improvement of LiB with electrode materials

An electrode of LiB is coated with active material\*<sup>1</sup> and conductive agent\*<sup>2</sup> through dispersion coating. The capacity and performance of LiB depend greatly on the ratio of these materials and agents, how they are dispersed, and how the electrode is coated with them.

The carbon nanotube (CNT) dispersants for LiB from Toyo-color Co., Ltd. are a conductive assistant, which features CNT processed by applying a proprietary dispersion technology. The addition of a tiny amount of these dispersants enables the securing of high conductivity and increases the amount of active material that can be added, permitting a further increase in LiB's capacity. In addition, high-purity CNTs are offered as easy-to-handle dispersants, contributing greatly to improving the production efficiency and safety of LiB.

The Toyo Ink Group has established a global system for supplying CNT dispersants for LiB, which consists of its production bases in Japan, China, North America, and Europe. With this system, we contribute globally to the spread of renewable energy and the promotion of a decarbonized society.

\*1 Active material: A material that emits and absorbs lithium ion

\*2 Conductive agent: A material that lowers the electrical resistance of electrodes



#### VOICE Contributing to accelerating the spread of EVs and expanding the use of renewable energy with LiB electrode materials.

There are countless tasks for achieving longer travel distance and shorter charging time of plug-in hybrid vehicles and EVs and for innovating the power infrastructure in the future. Those tasks include a capacity increase, durability improvement, downsizing, and cost reduction of LiB and other secondary batteries. Our CNT dispersants are highly acclaimed as important electrode materials that determine the performance of the batteries. We will continue to develop materials to contribute to solving issues on LiB and next-generation secondary batteries.



TOYO-COLOR CO., LTD.

