December 17, 2018

ADEKA Corporation

Providing samples of rare-metal-free active materials for next-generation rechargeable batteries

ADEKA Corporation (President and Chief Executive Officer: Hidetaka Shirozume) has begun providing samples of sulfurized polyacrylonitorile (hereinafter, “SPAN”), an active material for next-generation rechargeable batteries, with the aim of commercializing it in FY2020.

Rechargeable batteries are indispensable for our enriched life today as represented by smart devices and electric vehicles, among many other products. Demand for more sophisticated batteries is growing in terms of reduced size, higher energy density, longer life and other aspects.

A lithium-ion rechargeable battery involves the use of rare metals. As demand for rare metals grows, resource depletion and resultant rising costs become serious concerns. Sulfur has drawn attention for some time as possibly functioning as an active material for next-generation batteries, to satisfy performance requirements and address the concerns surrounding rare metals. However, sulfur has not yet found extensive application as an active material for rechargeable batteries, because the reactive intermediate that forms during discharge or charge dissolves into the electrolyte and may shorten the product life.

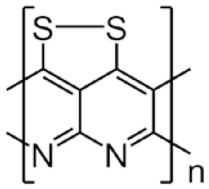
A product of the reaction of polyacrylonitrile (PAN) with sulfur, SPAN has been shown to retain stable battery performance for long periods in a prototype battery used in an electrode material. It can be expected to serve as a superior active material compared to sulfur. We consider SPAN to be a promising active material that may make next-generation rechargeable batteries free from rare metal and lightweighting and prolong their charge-discharge cycles.

Our efforts to develop the market will accelerate with an aim to, through the provision of samples, make SPAN the standard active material for next-generation rechargeable batteries.

We are also developing graphene (as conductive agents) and additives for electrolyte in the materials for next-generation rechargeable batteries. In particular, we encourage research and development in environmental and energy materials by, for example, expanding the development of materials over all-solid-state batteries, a trend in the battery industry, and pursue the creation of products to contribute to making our society sustainable.

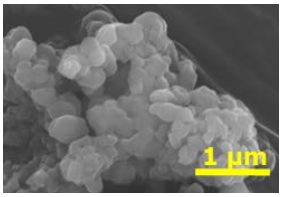
*Manufacturing SPAN generates a large amount of hydrogen sulfide and mass production of SPAN was therefore considered difficult. We employ the technology and knowhow for the processing of hydrogen sulfide we possess in our existing operations, and have considered its mass production with the use of procedures developed by the National Institute of Advanced Industrial Science and Technology and Toyota Industries Corporation.

[Estimated structure]



[Appearance]

[SEM image]



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