

# GS Yuasa develops lithium-sulphur battery

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GS Yuasa has developed a lithium-sulphur battery that has three times the capacity of existing battery products in the market, reports the Japan Times. The battery uses sulphur as a key material in the cathode and a silicon-based anode. The company is presently working on improving the durability of the anode in order to commercialise the next-generation lithium-ion battery by 2020.

Significance: Lithium-sulphur batteries are seen as a promising alternative to lithium-ion batteries since they can be manufactured at a lower cost thanks to the low price and high availability of sulphur. Such batteries can also offer increased range, according to Shuji Hitomi, group manager at GS Yuasa's research and development centre. However, to begin commercialising these batteries, the company needs to overcome a few challenges. Sulphur does not conduct electricity, which makes it difficult to obtain strong electric output from batteries using sulphur-based electrodes. To resolve this issue, GS Yuasa has filled sulphur in small holes on carbon rods to make the element conductive. Lithium-sulphur batteries generally suffer from poor cyclability, mostly because of the poor conductivity of sulphur, the heavy dissolution of polysulphides, and large volumetric expansion during lithiation. A handful of other researchers have tried to address these concerns. For instance, China's Huazhong University of Science and Technology has developed an ordered meso-microporous core-shell carbon (MMCS) as a sulphur container. The university claims that the MMCS offers the advantages of both mesoporous and microporous carbon for use in high-capacity, long-life cathodes for lithium-sulphur batteries.

SOURCE IHS