Low density solid state battery

Therefore, the introduction of the density of solid-state electrolyte in the battery design principles is very critical, as the density is a more accurately measurable parameter and the area of SSE is a defined value. The low-density, low-thickness, and low-mass SSEs are one of the key routes to reduce the battery mass.

Sulfur utilization in high-mass-loading positive electrodes is crucial for developing practical all-solid-state lithium-sulfur batteries. Here, authors propose a low-density inorganic...

This unprecedented battery configuration demonstrates high-rate (2C) performance and long cycle life (over 300 cycles), which exceeds preciously-reported sulfide SE/lithium batteries at low stack pressures, and may open up a promising route for high-energy-density, cost-effective and safe rechargeable lithium batteries.

All-solid-state batteries have been recognized as a promising technology to address the energy density limits and safety issues of conventional Li-ion batteries that employ organic liquid electrolytes.

Here, we present all-solid-state batteries reduced to the bare minimum of compounds, containing only a lithium metal anode, v-Li 3 PS 4 solid electrolyte and Li (Ni 0.6 Co 0.2 Mn 0.2)O 2...

This unprecedented battery configuration demonstrates high-rate (2C) ...

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a SEM, b STEM, and c SAED images of LPB powders. d XRD patterns, e Raman spectra, and f 31P MAS NMR of LPB. g 7Li MAS NMR of LPB, LPS, and LiBH4. A Beryllium air-sensitive sample holder for XRD measurement was employed with its background patterns presented in Supplementary Fig. 11.

a XRD patterns of S-C-LPS and S-C-LPB cathode powders. b SEM images of S-C-LPS and S-C-LPB cathode powders. c-f Ex-situ SEM and EDS mapping images of c pristine S-C-LPS cathode, d pristine S-C-LPB cathode, e lithiated S-C-LPS cathode, and f lithiated S-C-LPB cathode. g Schematic illustration of the influence of SE"s volumetric content on interparticle Li+ transport and formation of inactive bulky sulfur particles. h GITT and OCV curves of S-C-LPB and S-C-LPS cathodes at the third cycle. Current pulses of 50.25 mA g-1 for 30 mins were employed, followed by 4 h resting. i Overpotential profiles of S-C-LPB and S-C-LPS cathodes from the GITT measurement.

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

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