Sodium ion battery function

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Na-based batteries have shown substantial progress in recent years and are promising candidates for mitigating the supply risks associated with Li-based batteries. In this Review, Na and Li batteries are compared in terms of fundamental principles and specific materials. Principles for the rational design of a Na battery architecture are discussed. Recent prototypes are surveyed to demonstrate that Na cells offer realistic alternatives that are competitive with some Li cells in terms of performance.

All authors contributed to researching data, discussing content and writing the manuscript. The sections on fundamental properties were developed mostly in Stuttgart (J.M., R.U., J.P.), the materials section mostly in Singapore (P.B., M.L.) and the section on full cells mostly in Beijing (Y.-S.H., Y.L.). R.U. and J.M. coordinated and edited the manuscript prior to submission.

Environmental Justice Atlas (Li mining by the Lichu River): https://ejatlas/conflict/a-sudden-mass-death-of-fish-in-the-lichu-river-in-minyak-lhagang-dartsedo-county-in-karze-prefecture

Sodium-ion batteries operate analogously to lithium-ion batteries, with both chemistries relying on the intercalation of ions between host structures. In addition, sodium based cell construction is almost identical with those of the commercially widespread lithium-ion battery types. However, sodium-ion batteries are characterised by several fundamental differences with lithium-ion, bringing both advantages and disadvantages:

Many of the battery components in both sodium-ion and lithium-ion batteries are similar due to the similarities of the two technologies. This post provides a high-level overview for the constituent cell parts in Sodium-ion batteries.

The battery cell energy density, both volumetric and gravimetric will preclude the use of sodium ion in most vehicle applications. Except perhaps the very smallest packs where sodium can offer an advantage in terms of cost. Although, at the moment it is very early days for the maturity of the supply chain and the cost will be relatively high.

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