



Chemical Pre-lithiation Methods and Uses for Li-Ion Batteries

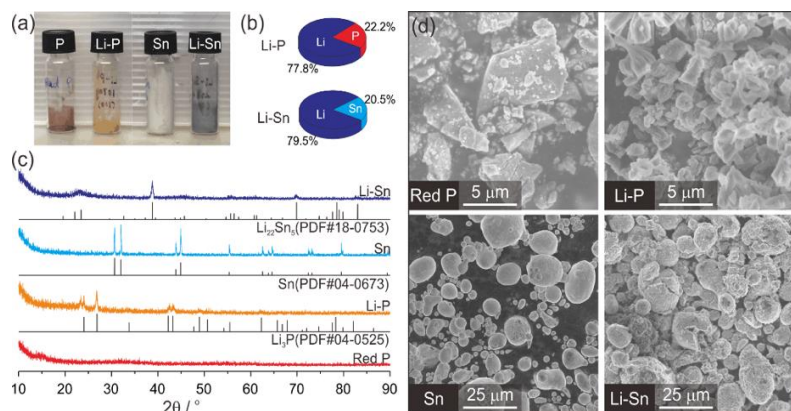
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APPLICATION

Electric Vehicles (EV), Smart electronics, Low cost batteries for consumer electronics, sensors and other applications.

TECHNOLOGY

The inventors have created a family of chemical additives to mitigate lithium ion losses during solid electrolyte interphase (SEI) formation in Lithium Ion Batteries (LIB) to meet the ever-growing performance requirements. These chemical additives and methods make extra lithium ions available during charge discharge cycles thereby slowing capacity fade. This new additive addition process easily integrates with existing manufacturing process and can also be used with sodium ion batteries.



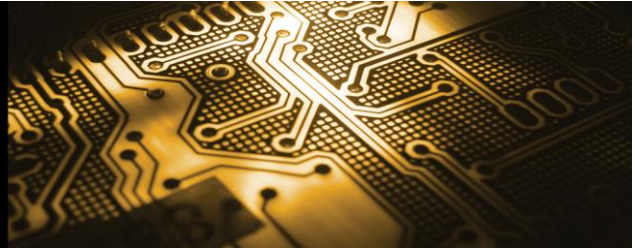
An important goal of the battery industry is extending battery lifetime. Lithium-ion batteries (LIBs) with high energy densities and good cycling performance are highly desired for the widespread usage of portable electronic devices and the emerging market of electric vehicles. The conventional LIBs are primarily based on graphite negative electrodes (NE) and lithium metal oxide (LMO) positive electrodes (PE) and their energy densities are typically 150 ~ 200 Wh kg⁻¹, which struggle to fulfil the increasing demand. Very positive test results have been obtained for these new additives and method that provide numerous benefits over current batteries on the market.

FEATURES and BENEFITS

- ❖ **Reduces Initial Capacity Loss** – Helps compensate for the initial capacity loss during SEI formation.
- ❖ **Easier to Manufacture**– Can be prepared in ambient conditions without a dry room
- ❖ **Retrofit** – The technology can be easily fit into existing manufacturing process without substantial capital expenditure
- ❖ **Strong Performance** – Increase in capacity per unit volume to enable longer driving distance and usage time
- ❖ **Reduces SEI** – Pre-lithiation compensates for active loss through SEI
- ❖ **Improves** -The available energy densities of Li-Ion Batteries



Technology Overview



INTELLECTUAL PROPERTY

PCT filed 24th Sep. 2019, [PCT/US2019/052787](#)

“Chemical Prelithiation Methods and Uses”

This technology is part of an active and ongoing research program and is seeking partners for development of the final product. It is available for developmental research support and/or licensing under either exclusive or non-exclusive terms.

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