Advanced lithium-ion technologies and beyond

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Many of the recent efforts to improve lithium-ion batteries have focused on developing anode or cathode materials that can hold more charge in a given volume, leading to higher energy densities. Today high Ni content layered oxide type materials such as NCA or NCM have taken the lead in term of energy density, despite safety sensitivy at cell level in case of abuse condition, and sensitivity to cobalt price and supply.

Besides the race to energy,one of the most promising cathode material combining safety without compromising energy and with no dependence to cobalt, is LFMP ($LiFe_xMn_{1-x}PO_4$). Despite these advantages, until now, the development of this technology has been hindered by material intrinsic electronic and ionic conductivity, processability, electrode and cell design. Deep understanding of the limitations at material, cathode, anode and cell levels have allowed to propose suitable solutions to unlock these technological barriers,

Combining best of the layered oxide and olivine cathode materials families, LFMP based technology allows a possible gain of 15% in volumetric energy vs lithium iron phosphate (LFP), excellent rate capability up to 5C, and excellent cycle life and high safety. When safety and energy is a must, this technology is very well fitted with mobility and industrial applications.