

## Electrochemical Characterizations of Organic Compounds as an Electrolyte Additive for High Voltage Lithium Batteries

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For the purpose of high energy density, the high voltage lithium-ion batteries have been widely investigated recently. But, their commercial uses are restricted due to the instability of electrolyte at the cathode surface. Novel electrolyte additives materials are studied for the enhanced anodic stability of electrolyte by the formation of passivating films on  $\text{LiNi}_{0.5}\text{Mn}_{1.5}\text{O}_4$  cathode. The additives are chosen among the various organic compounds and a small amount of additives is added to the electrolytes of 1 M  $\text{LiPF}_6$  in ethylene carbonate(EC), ethyl methyl carbonate(EMC) (3:7 by volume ratio). The cycle performance and Coulombic efficiency at the elevated temperature of LNMO/Li cells are greatly improved when the selected additives with specified functional group are added to the electrolyte. The additive to form a stable SEI film on the LNMO cathode surface shows excellent properties at the elevated temperature and high voltage conditions.