

Novel redox shuttle additive for high-voltage cathode materials

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Experimental

Two formation cycles were conducted to the cells with or without 5% TEDBPDP before they were constant-current charged to 4.0V (Li/LiMn₂O₄) and 4.5 V (Li/Li_{1.2}Ni_{0.15}Co_{0.1}Mn_{0.55}O₂). AC impedance analysis was then conducted using a Solartron Analytical 1470E cell test system coupled with Solartron Analytical 1400 FRA Impedance Analyzer. The frequency range was between 1MHz and 0.01 Hz with voltage amplitude of 5mV.

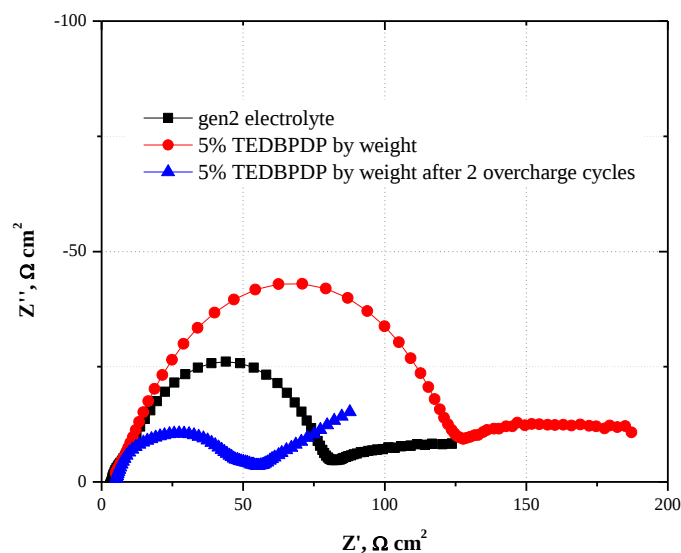


Fig 1. Nyquist plots for LiMn₂O₄/Li cells with or without 5% by weight TEDBPDP in the Gen2 electrolyte (1.2M LiPF₆ EC/EMC 3:7 by weight).

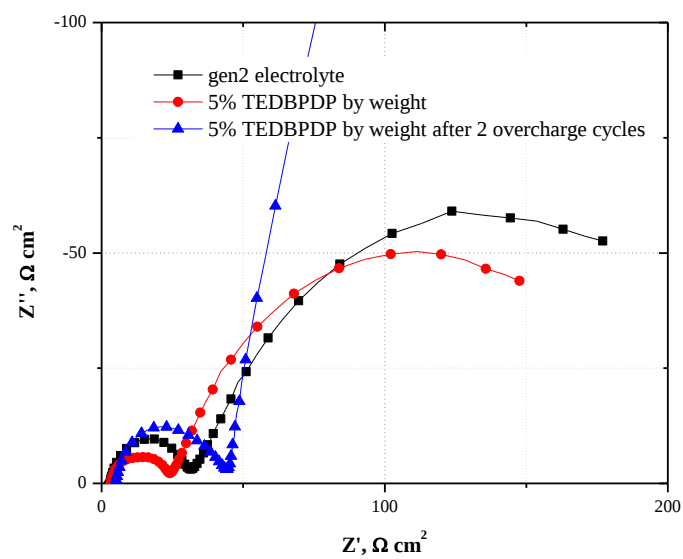


Fig 2. Nyquist plots for $\text{Li}_{1.2}\text{Ni}_{0.15}\text{Co}_{0.1}\text{Mn}_{0.55}\text{O}_2/\text{Li}$ cells with or without 5% by weight TEDBPDP in Gen 2 electrolyte (1.2M LiPF_6 EC/EMC 3:7 by weight).