

**Self-Discharge Analysis of LiCoO₂ for Lithium
Batteries**

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In the charged condition, batteries are in a state of high energy relative to that of the system in the discharged state. Hence, there is a ‘driving force’, corresponding to the free energy of discharge, tending to spontaneously diminish the charge if some mechanisms of self-discharge exist. We determined the self-discharge of Li/LiCoO₂ cells from the decline of their open-circuit voltage and preserving rate of discharge capacity. In addition, we studied ac impedance of Li/LiCoO₂ cells. Preventing of self-discharge is especially important for munitions remained out of use state. In case of nanocrystalline LiCoO₂, cycle performance is superior to coarse-grained LiCoO₂, however, self-discharge performance is inferior to coarse-grained LiCoO₂. A better cycle performance until 200 cycles might due to well-formed SEI layer and smaller particle size in nanocrystalline LiCoO₂.