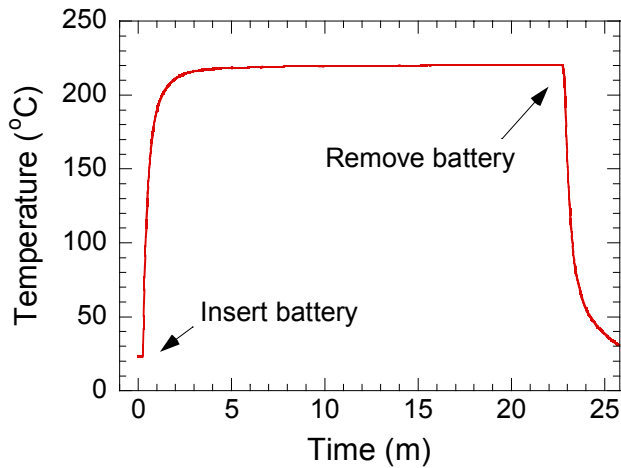


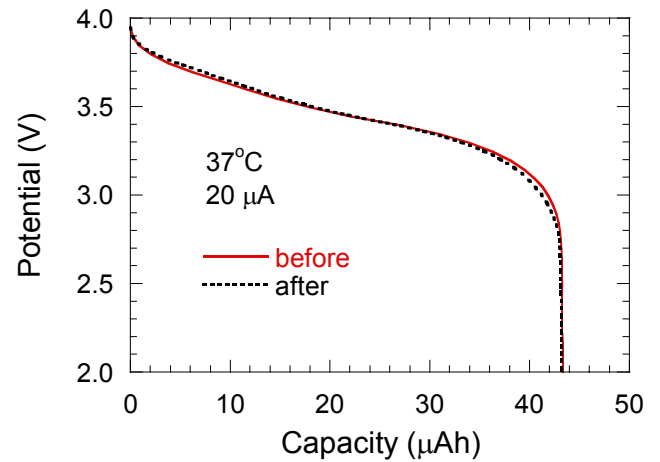
Thin Film Lithium-Ion Batteries

Rapid Heating and Cooling

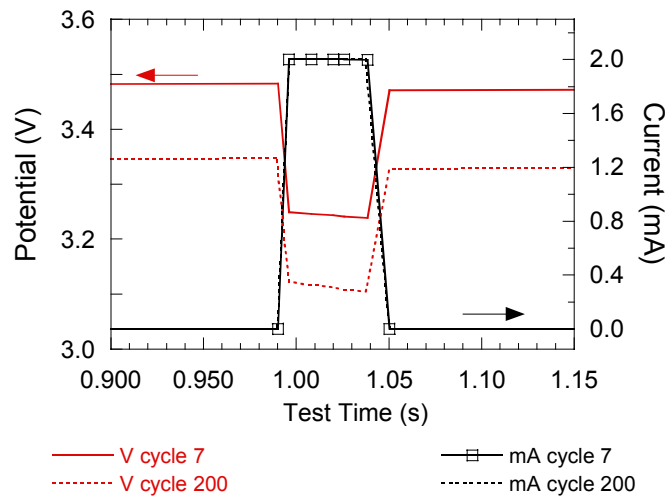
A battery (ORLI.0.5.CL series 22C) was discharged to 1.6 V, inserted into a preheated furnace, and removed rapidly after soaking for 20 min at 220°C. The temperature was measured with a thermocouple mounted adjacent to the battery on a ceramic plate. Tests showed no degradation in battery performance after heating.



Temperature measured at 1 s intervals with thermocouple attached to battery.



Discharge curves measured before and after heat treatment.



Pulse discharge tests remained unchanged after heat treatment. Shown above are cycles 7 and 200 after heating to 220°C. Each cycle consisted of a 2 mA discharge for 50 mS followed by a 1 s rest with no recharge between cycles. Test at 37°C.