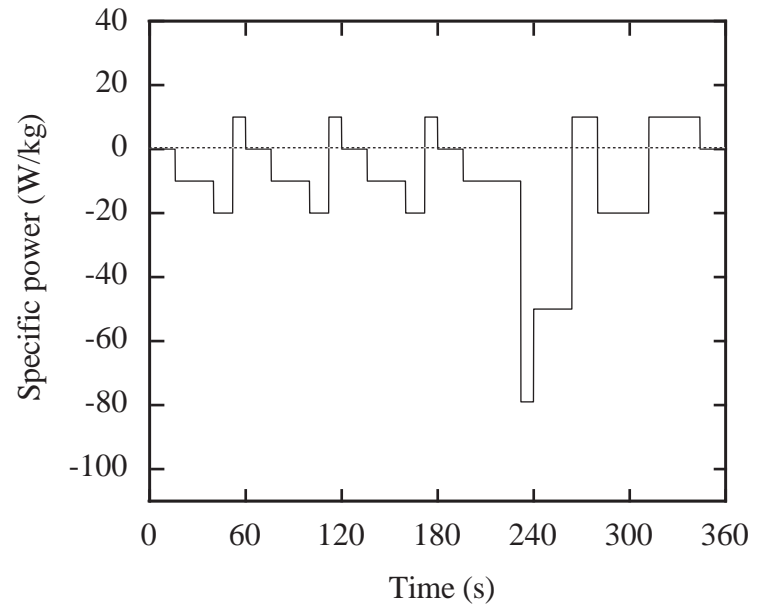


(a) DST cycle



(b) SFUDS profile

Fig. 1 Dynamic stress test (DST) cycle and simplified federal urban driving schedule (SFUDS) profile

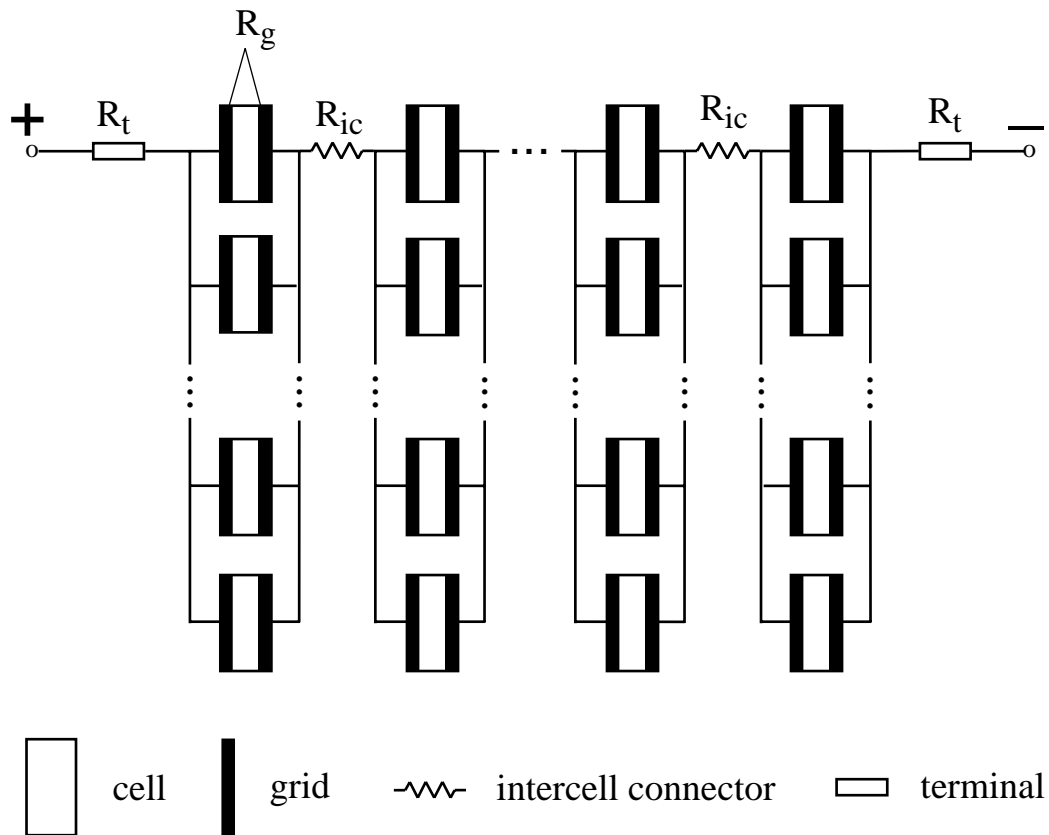


Fig. 2. Schematic configuration of a battery module

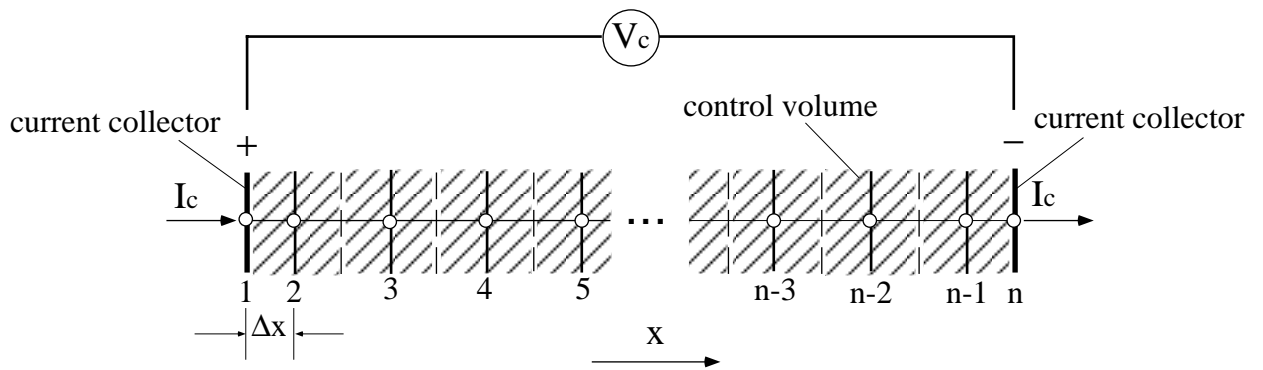
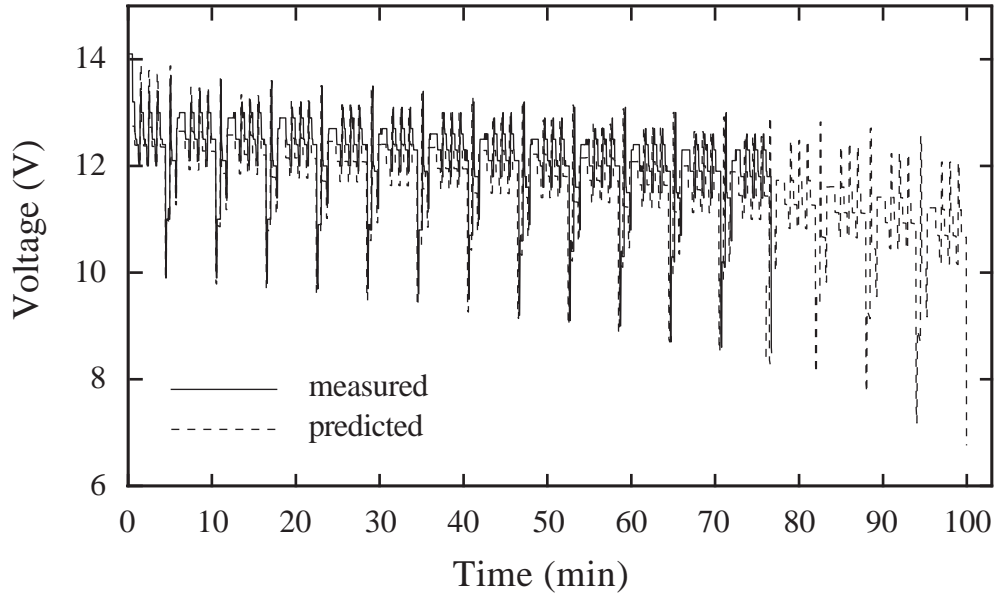
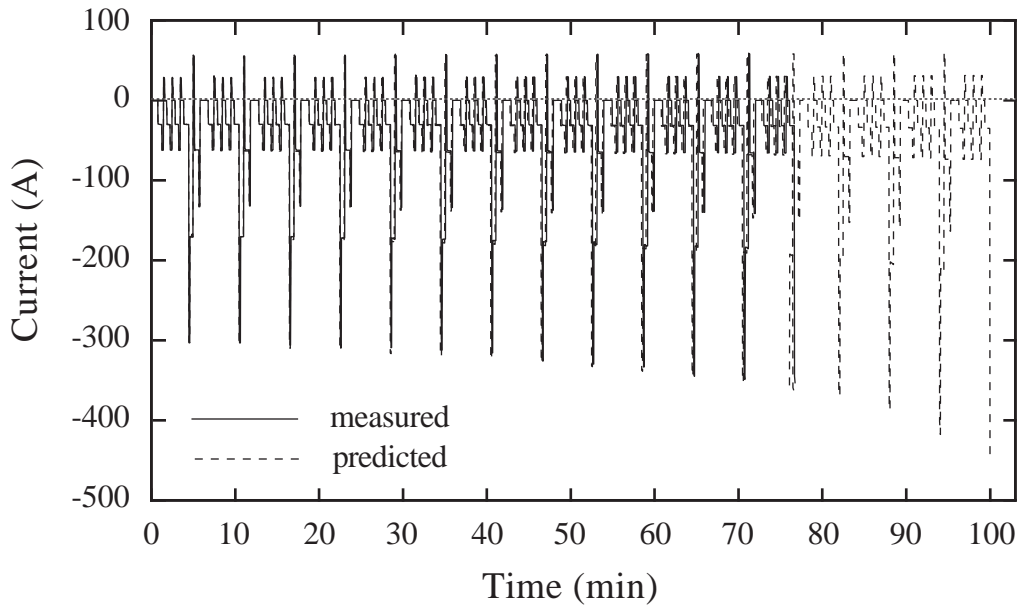


Fig. 3. Schematic of control volumes and computational meshes for a battery cell



(a) Voltage profile



(b) Current profile

Fig. 4. DST curves of the lead-acid battery module at 3.0 kW peak power and ambient temperature. Comparison of experimental data with simulated results

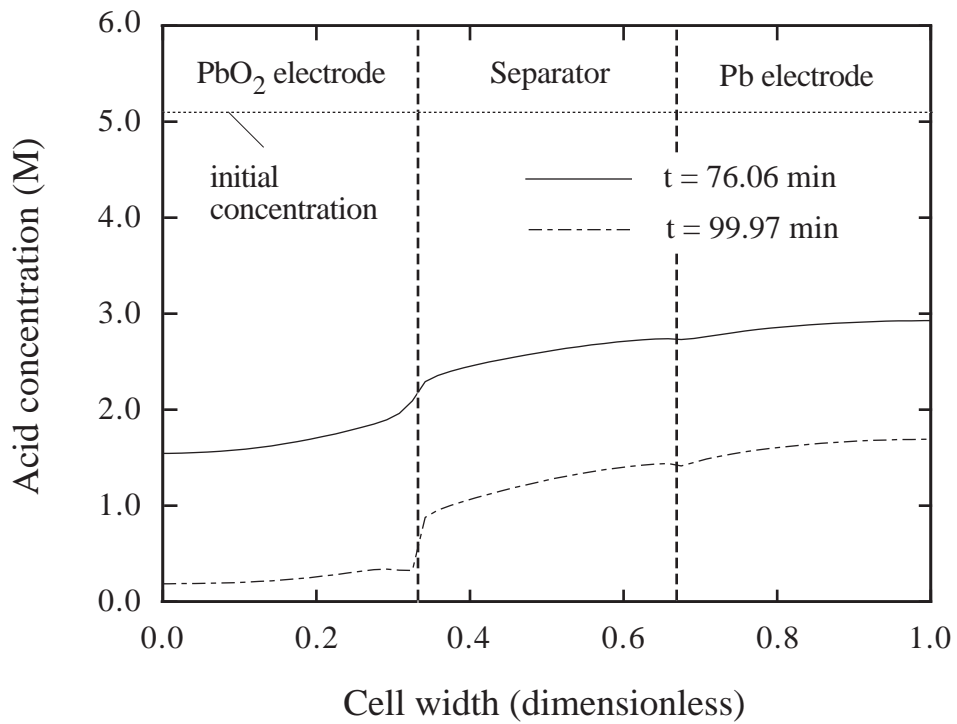


Fig. 5. Electrolyte concentration profiles across a lead-acid battery cell at $t = 76.06$ min (corresponding to the end of DST testing) and $t = 99.97$ min (at the end of simulated DST cycle).

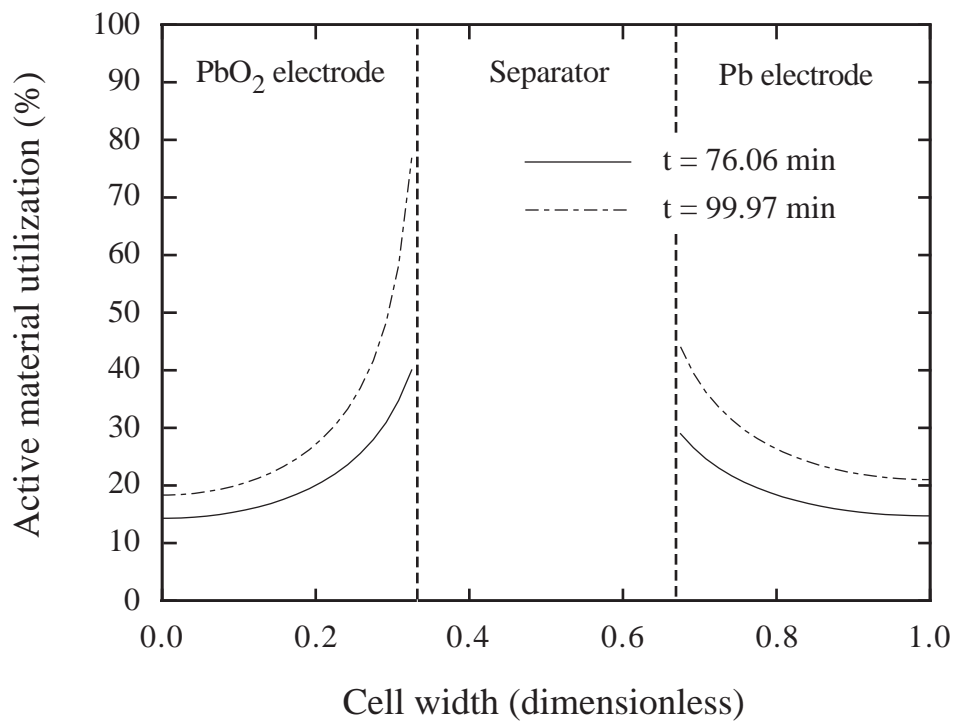
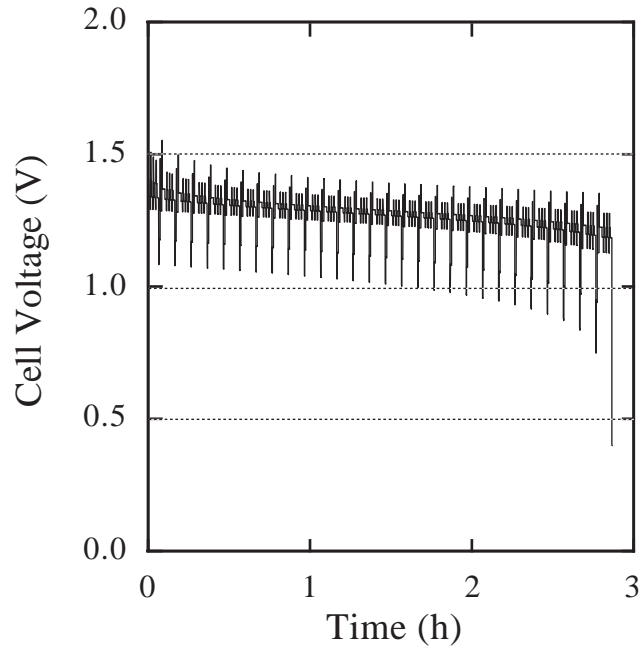


Fig. 6. Electrode active material utilization profiles across the lead-acid cell at $t = 76.06$ min (corresponding to the end of DST testing) and $t = 99.97$ min (at the end of simulated DST cycle).

Figure 6 of Reference [8]

(a) Measured



(b) Simulated

Fig. 7. Comparison of measured and simulated DST voltage profiles of a Ni-MH cell

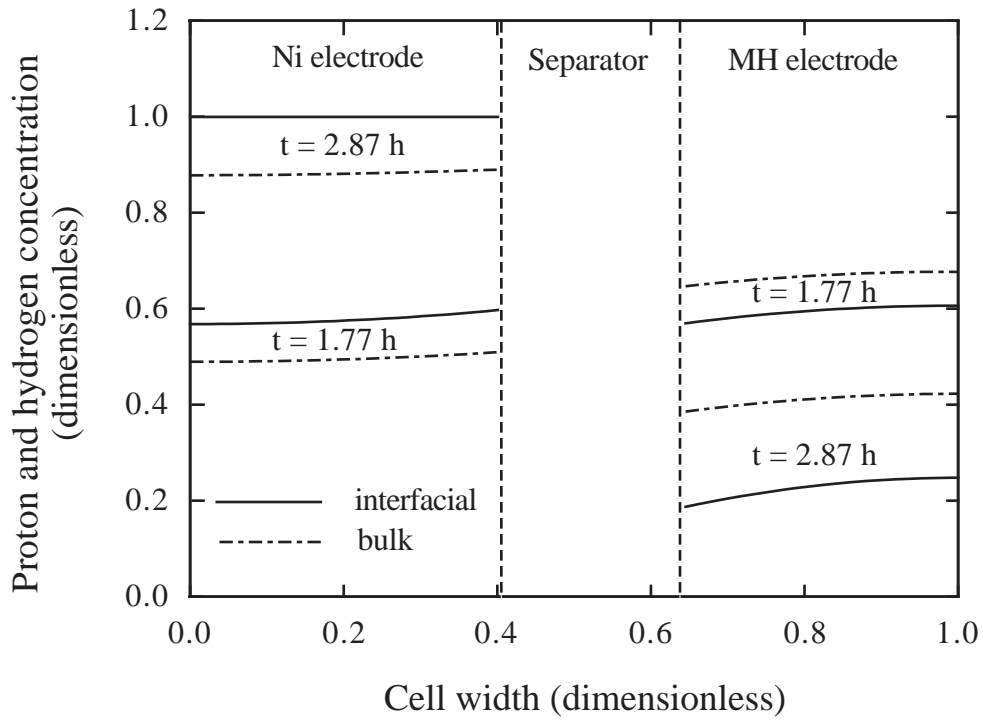


Fig. 8. Predicted proton and hydrogen concentration profiles across the Ni-MH cell during a DST cycle at $t = 1.77$ h (corresponding to the cutoff voltage of 1.0 V) and $t = 2.87$ h (when the cell voltage drops below 0.4 V).

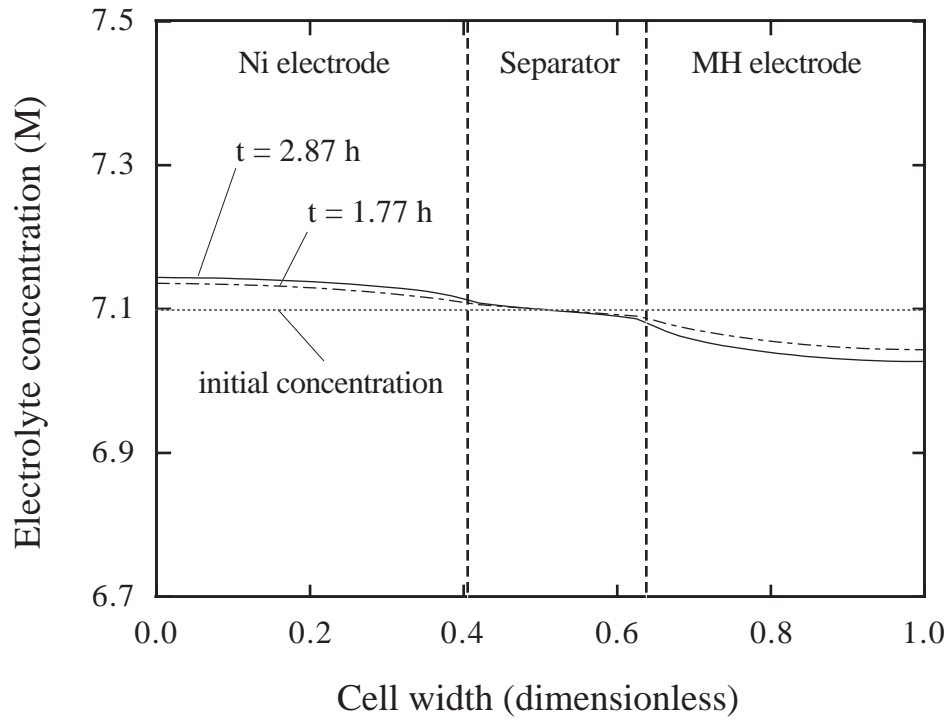


Fig. 9. Simulated electrolyte concentration profiles across the Ni-MH cell during a DST cycle at $t = 1.77$ h (corresponding to the cutoff voltage of 1.0 V) and $t = 2.87$ h (when the cell voltage drops below 0.4 V).