

## Enabling Early Detection and Prevention of Thermal Runaway of Li-ion Battery Cells Utilizing Nexceris' Li-ion Tamer™ Products

Nexceris has recently adopted a battery testing program for determining the off-gassing characteristics of lithium ion battery cells under abuse conditions. The program is applicable to cells of all chemistries and form factors. This program has been very successful in demonstrating the value of Nexceris' Li-ion Tamer™ products as shown by the data presented in this paper. These tests have shown that Nexceris' Li-ion Tamer™ monitors provide a dependable early indication of catastrophic failure and that utilizing our patent pending system enables the prevention of thermal runaway while eliminating false warnings.

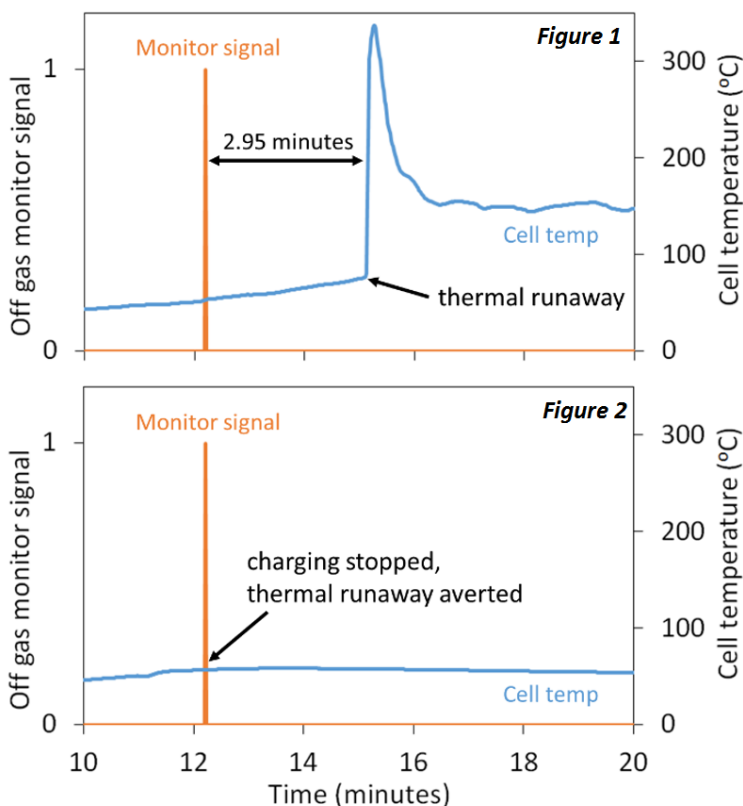


Figure 1 shows that the Li-ion Tamer™ monitor has the capability to give an early indication of thermal runaway during an overcharge failure test. In this test, a large-format lithium ion pouch cell was overcharged until failure. Nexceris' Li-ion Tamer™ monitor gives a 3-minute early indication of thermal runaway.

In Figure 2 the same test is performed as in Figure 1, but a mitigating action is taken to prevent thermal runaway. The mitigating action involves isolating the battery by disconnecting power and stopping charge at the indication of an off-gassing event (see animation [here](#)). This figure shows that isolating the battery will prevent thermal runaway.

If you are interested in the Li-ion Tamer™ monitor or incorporating your battery cells into our battery failure testing program to understand your batteries off-gassing characteristics, please contact Nick Frank at [n.frank@nexceris.com](mailto:n.frank@nexceris.com) or (614) 842-6606 ext 138.