

Identifying Critical Process Zones – Synchronized Measurement of Mass and Temperature Profiles Provides New Insights into Thermal Processes

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adphos is expanding the possibilities for analyzing thermal processes with its newly developed adphos ThermoLab (aTL). This specially designed analytical tool enables the synchronized measurement of both the mass change of a sample and its temperature profile, which is measured without contact, during thermal treatment. Thanks to the high temporal resolution (milliseconds) and precise weighing capability (micrograms), evaporation and reaction behavior can be monitored in detail throughout the thermal treatment. This capability opens new opportunities for systematically investigating process parameters and for gaining a deeper understanding of material behavior during thermal processing.

One example of such investigations is the drying of coated materials in battery manufacturing. During these processes, thermal treatment must avoid negative effects such as binder migration or gradient formation, which can lead to cracking. By synchronizing the measurement of mass and temperature profiles, critical process zones within the electrode coating can be identified, analyzed, and incorporated into process control strategies.

The adphos ThermoLab (aTL) is not limited to battery applications. It can also be used for a wide range of thermal process analyses in applications involving coatings, adhesives and functional layers.

These investigations can be conducted at the adphos Application Laboratory in Bruckmühl, Germany, where companies can test material samples under realistic process conditions. Additionally, loan installations of the adphos ThermoLab (aTL) are available for testing in the customer's own development environment.

The new analytical capabilities will be presented for the first time at the *International Battery Seminar & Exhibit* in March 2026 in Orlando, Florida.

adphos develops and manufactures system solutions for industrial thermal processes. The aNIR® technology developed by adphos is based on photonic radiation and enables rapid and precise energy input into materials.

This allows thermal processes in various industrial applications to be controlled and optimized with high precision. The adphos ThermoLab (aTL) expands the possibilities for targeted analysis and validation of process parameters in applications using aNIR® technology.

Further information is available at [info\(at\)adphos.de](mailto:info(at)adphos.de).

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The adphos ThermoLab (aTL) enables the synchronized measurement of mass and temperature profiles during thermal process investigations