Simultaneous Thermal Analyzer (STA)

Integrated TGA and DSC for Advanced Material Characterization

INTRODUCTION

"Reliable, Robust, Cost-Effective Thermal Analysis."

AMI is pleased to introduce its next-generation Simultaneous Thermal Analyzer (**STA**), a state-of-the-art instrument designed for advanced thermal analysis. Incorporating a 0.1-microgram balance resolution, sophisticated control algorithms, and an innovative hang-down design, this analyzer delivers exceptional precision and reliability in an affordable, high-performance system.

The **STA** Series enables simultaneous Thermogravimetric Analysis (TGA) and Differential Scanning Calorimetry (DSC)/Differential Thermal Analysis (DTA) on a single sample within a single run. Built for reliability and precision, the STA delivers comprehensive thermal profiles without the need to run multiple experiments—saving you both time and sample material.

Engineered for quality control, routine testing, academic research, and industrial R&D, the **STA** Series combines robust construction with user-friendly intuitive software, offering a cost-effective solution for high-precision thermal analysis.

The **STA** is controlled by the Infinity Pro Thermal Analysis software. This unique Windows based software offers a very simple interface with all the features you need to analyze your thermal data.

*Figure 1. **STA** Simultaneous Thermal Analyzer*

DIVERSE MATERIAL ANALYSIS

- Polymers
- Chemicals
- Petrochemicals
- Polymorphs
- Superconductors
- Ceramics
- Glasses
- Composites
- Metals
- Engineered alloys
- Pharmaceuticals
- Catalyst Research
- Building Materials
- Propellants
- Explosives
- Electronic Components
- Coals & other fuels
- Catalysts
- Nuclear Science Materials
- Food and Biomaterials

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KEY FEATURES

True Hang-Down Balance Design
Industry-leading stability, sensitivity, and long-term drift resistance for reliable and repeatable measurements without the need for buoyancy corrective experiments.

High Sensitivity Microbalance
Sub-microgram-level accuracy across a broad temperature range, providing confidence in your thermal and mass loss data.

24-Bit Resolution
High-precision measurement of temperature, delta T, and weight with minimal noise and high digital fidelity.

Small Swept Volume Furnace Cup (7.5mL)
Enhances temperature uniformity and gas exchange efficiency.

Simultaneous TGA/DSC or DTA
Perform thermogravimetric and calorimetric analyses in a single run—ideal for decomposition, oxidation, and phase transitions.

Dual Purge Gas System
Separate channels for purge and protective gases allow for fine control of the experimental atmosphere.

Broad Temperature Range
Furnace operation up to 1500°C under inert, oxidizing, or reducing gas environments.

Motor-Driven Furnace Lift
Ensures automated, smooth movement of the furnace for consistent sample positioning.

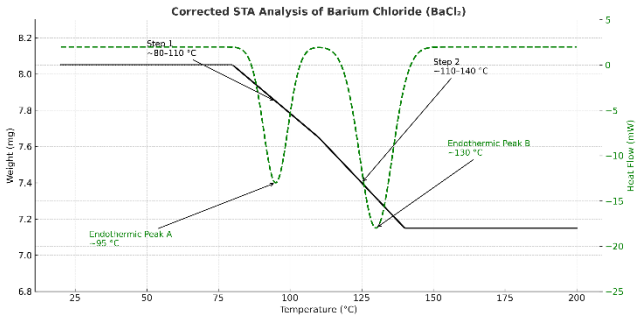
STA SERIES OPTIONS

- **Evolved Gas Analysis (EGA) Compatibility**
  Interface with mass spectrometry (MS) or FTIR systems for evolved gas studies during thermal decomposition.
- **4-Gas Selector System**
  Automates delivery of up to four different gases for programmable switching during analysis.
- **Sub-Ambient System (650°C Model)**
  Low-temperature furnace models support experiments starting below room temperature
- **High-Temperature Flexibility**
  Optional DSC-only high-temperature mode to allow DSC-only to 1,500°C
  Optional TGA-only high-capacity mode for larger or reactive samples

EXAMPLE DATA

Barium Chloride

This is an example of a reference material that shows temperature and enthalpy accuracy. In addition, this represents a good example of a fused peak analysis.



Calcium Oxalate

Calcium Oxalate is an excellent demonstration material for both DSC and TGA. This sample was run in the presence of Oxygen. The first DSC peak has an associated weight loss and represents bound water.

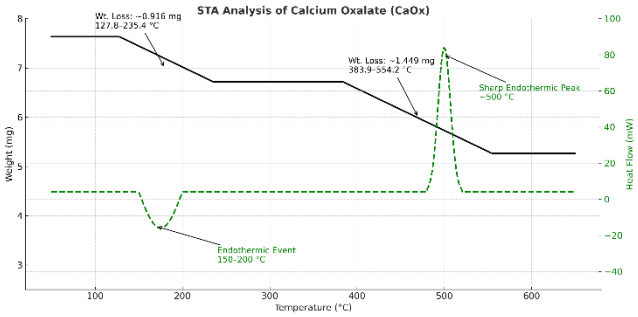


*Figure 2. **STA** data analysis*

SPECIFICATIONS

Model	STA 650	STA 1200	STA 1500
Temperature	-40°C-650°C	Ambient to 1200°C	Ambient to 1500°C
Programmed Rate	0.1-100 °C/min	0.1-60 °C/min	0.1-60 °C/min
DSC Sensitivity	<1 µW	<4 µW	<4 µW
TGA Measuring Range	+/- 200 mg		
TGA Readability	0.1 µg	0.1 µg	0.1 µg
Thermocouple	Type K	Type R	Type R
DSC/DTA mode	Yes	Yes	Yes

ABOUT US

Advanced Measurement Instruments (AMI), consisting of Altamira Instruments, Rubolab, ISI, and JWGB, offers a comprehensive portfolio of solutions for all your material characterization needs. As a global and diversified company, we have many years of professional experience, and our mission is to empower scientists and researchers around the world in the field of materials science by providing cutting-edge analytical instruments. We are committed to providing high-quality, user-friendly, cost-effective products and services to ensure that customers get the best solutions in research and industrial applications.

MISSION

At AMI, our mission is to advance the world of materials characterization by providing cutting-edge analytical instruments that empower customers in commercial and research fields.

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