



INSTRUMENT USE SHEET

SIMULTANEOUS THERMAL ANALYZER TG DSC – NETZSCH STA 409 PC Luxx

General Information

Instrument: Simultaneous thermal analyzer TG DSC

Brand: NETZSCH STA 409 PC Luxx

- Location:
- CRIETT – Valleggio Cubo
- Via Valleggio 9, Como
- Floor: 0, laboratory PT-08

Contact person:

- Dr. Cristina CORTI
- Email: cristina.corti@uninsubria.it
- Phone: +39 031 238 6491

List of users:

Dr. Cristina Corti
Dr. Sonia Mosconi
Prof. Sandro Recchia
Dr. Nicola Schiaroli

Training path: Yes*

* Autonomous use of the instrument is allowed starting from PhD level and above.
Practical training involves individual instruction (several days of training, the duration of which will be defined by the instrument contact person based on an assessment carried out during supervised training).



Internal tickets can be viewed on the intranet page (access with university credentials): <https://intranet.uninsubria.it/areadocumenti/ticket-strumenti-criett-utenti-interni>

The fee schedule for external users can be viewed on the website:
www.uninsubria.it/criett

Traceability of CRIETT services in scientific publications (see CRIETT Regulation Art. 11): It is mandatory to acknowledge in scientific publications the CRIETT large instrumentation used, according to the following formula:

“The scientific support from CRIETT centre of University of Insubria (instrument code: XXX) is greatly acknowledged”.

Instrument code: MAC08

Access Mode

1. Direct Access (Self-Service)

Who: Only users who use the instrument continuously have received specific training and are authorized by the instrument contact person.

Mode: The trained user can independently access and operate the instrument, booking it online.

2. Technical Scientific Service Access (Full Service)

Who: Research groups using the instrument occasionally, external users, or users without qualified personnel.

Mode: Access is managed with the support of dedicated technical staff, who handle booking and instrument operation.

3. Occasional/Temporary user

May access the instrument through the contact person or an authorized user.

Description and Functionality

Simultaneous thermal analyzer combining thermogravimetry (TGA) and calorimetric analysis (DSC or DTA) in a single instrument. It allows the study of how sample mass and thermal properties change with temperature from room temperature up to high temperatures (tested up to 1100°C) under controlled atmospheres (inert gas such as N₂, or oxidizing gas such as O₂/N₂ mixtures).

It enables the identification of phase transitions, decomposition, oxidation, crystallization, and moisture loss, with high resolution in both mass and energy measurements, even on very small sample quantities.

Technical features:

- Analytical method: Simultaneous Thermal Analysis (combination of TGA and DSC or DTA to study mass changes and thermal signals in the same experiment)
- Temperature range: room temperature (RT) up to 1100°C
- Heating/cooling rates: from 0.1 K/min to 50 K/min (routine use: 1–20 K/min)
- Possibility of isothermal steps and monitoring
- Measurement atmospheres: inert and oxidizing gases supported
- Optimal sample amount: 10–50 mg (lower amounts possible; larger crucibles only in TG mode)
- Crucible type: standard alumina crucibles
- Data analysis software: Proteus software for determining temperatures, weight losses, and energy changes

Safety Warnings

- Use it only after completing the required training
- High temperatures: the instrument operates at very high temperatures; do not touch the furnace, sample holder, or crucibles during or after measurements without proper cooling. Do not open the furnace or interrupt gas flow when temperature is above 40°C

- Always turn on the fume hood before starting measurements
- Check at least daily the correct water flow of the tap connected to the thermostatic bath
- On startup, check the level of the thermostatic bath and refill if necessary, with deionized water/ethanol solution
- Avoid analyzing materials that may react violently, explode, or rapidly sublime at operating temperatures. If in doubt, use crucibles with lids
- Never switch off the central part of the instrument (balance and furnace)
- Handle crucible loading carefully; the alumina arm is fragile
- Ensure correct alignment of furnace, sample holder, and first ring during closure
- Handle compressed gases (O_2 and N_2) according to safety regulations; always close gas cylinders and valves after use
- Restart the PC at least once per day to avoid software crashes and gas flow interruptions
- In case of doubt or anomalies, contact the technician/contact person

Operational Notes

- Instrument booking is mandatory via the internal management system (online Google Calendar – access granted after training completion)
- Self-service use is allowed only for trained and authorized users
- Any malfunction must be promptly reported to CRIETT staff

Materials and accessories provided by CRIETT

- For stable users: personal crucible set must be purchased
- For occasional users: crucibles and lids provided by CRIETT (if the sample damages the crucible, the cost will be charged to the user)



- Tweezers
- Gases
- Balance
- Deionized water and ethanol

Materials and accessories provided by the user

- Sample weighing spatula
- Personal crucible set (for stable users)

