INSTRUMENT USE SHEET

ICP-MS THERMO SCIENTIFIC iCAP Q

General Information

Instrument: ICP-MS THERMO SCIENTIFIC iCAP Q
Brand: Thermo Fisher Scientific

Location:

- CRIETT – Cubo Building
- Via Valleggio No. 9, Como
- Floor: 0 – Lab PT-10 (CO.CUBO PT.018.0)

Contact person:

- **Dr. Davide SPANU**
  Email: davide.spanu@uninsubria.it
  Phone: +39 031 238 6428

List of users:

Dr. Gilberto Binda
Dr. Gabriele Carugati
Dr. Cristina Corti
Prof. Damiano Monticelli
Prof. Sandro Recchia
Dr. Davide Spanu

Training path: Yes*

* Autonomous use of the instrument is allowed. Practical training includes individual instruction (at least two days of training, the duration of which will be defined by the instrument contact person). For the theoretical part, the contact person will provide lecture notes on operating principles.

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 large CRIETT 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: MAC10

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 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 provided through dedicated technical staff, who manage booking and instrument operation.

3. Occasional/Temporary user

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

Description and Functionality

Inductively Coupled Plasma Mass Spectrometer (ICP-MS) Thermo Fisher Scientific iCAP Q, designed for trace and ultra-trace elemental and isotopic analysis. The instrument enables quantitative and semi-quantitative determination of metallic and metalloid elements in various matrices, including:

- Environmental samples (water, soil, sediments)

- Biological samples
- Industrial materials and matrices
- Extracts from solid samples

The iCAP Q ICP-MS is suitable for elemental speciation studies when coupled with separation techniques (e.g. HPLC, IC) and for high-sensitivity multi-element analysis.

Technical features:

- Inductively Coupled Plasma (ICP) ionization source for high-efficiency ionization
- Quadrupole mass spectrometer
- Sample introduction system with nebulizer and spray chamber
- Collision cell for reduction of spectral interferences
- Wide dynamic range detector
- Dedicated software for data acquisition, processing, and management
- Analyzable elements: from low mass (Li) to heavy elements (U)
- Detection limits: at ng/L level (matrix dependent)

⚠ Safety Warnings

- Use only after completing the required training and authorization
- Check plasma status, gas supply, and cooling system before starting
- Handle acids and chemical solutions (e.g., HNO_3) according to laboratory safety regulations
- Analyze properly diluted and, if necessary, pre-filtered samples
- Thoroughly clean the sample introduction system and aspiration line after analysis

- Properly shut down the instrument following the software shutdown procedure
- Do not intervene on internal components or plasma system without authorization
- In case of doubt or malfunction, contact the technician/contact person

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Operational Notes

- Instrument booking is mandatory via the internal management system (Google Calendar)
- 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

- Ultrapure water
- Autosampler
- Sample introduction system (tubing and peristaltic pump)
- Paper
- Laminar flow hood

Materials and accessories provided by the user

- Reagents (including ultrapure acids and standard solutions)
- Containers
- Other materials and accessories not specified above

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