

**LABORATORY: CNR ISPC Stone Lab - Chemistry Section**

**NAME OF THE INSTRUMENT**

iCAP™ TQ ICP-MS spectrometer (Thermo-Fisher Scientific) coupled to NWR213 laser ablation system (Elemental Scientific Lasers-ESI)

**GENERAL INFORMATION:**

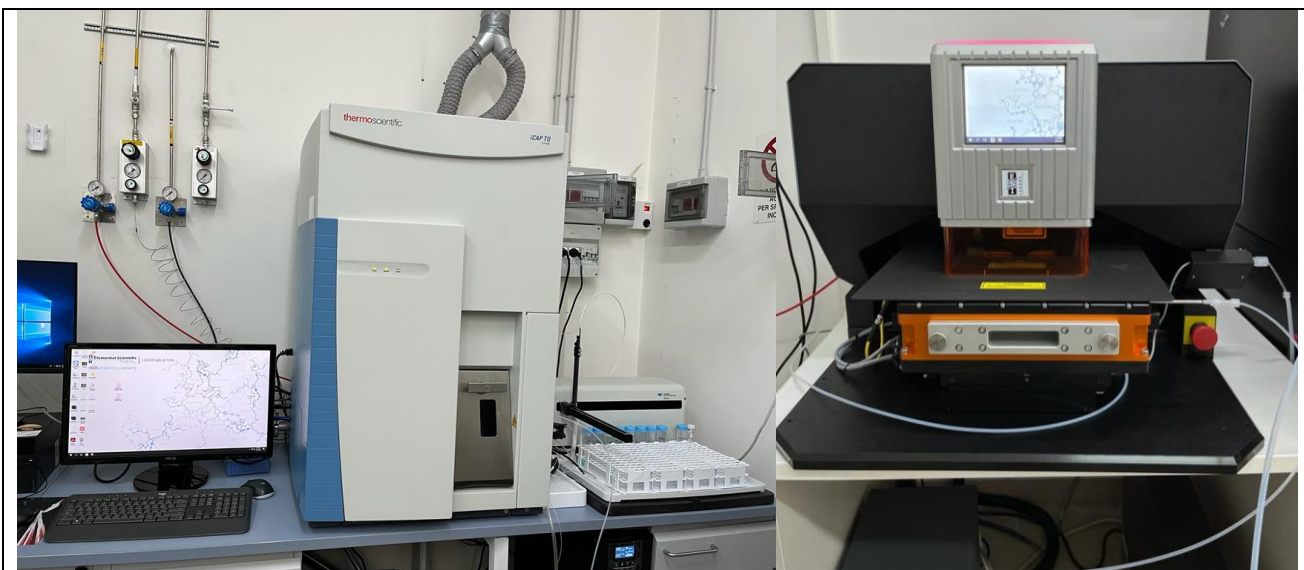
Triple Quadrupole (TQ) Inductively Coupled Plasma Mass Spectrometer interfaced with Laser Ablation System (LA-ICP-MS) for the analysis of metallic and non-metallic inorganic materials in solid and solution samples. The Laser Ablation System is also enabled to perform high resolution chemical imaging.

**iCAP™ TQ ICP-MS TECHNICAL DETAILS:**

- Triple Quadrupole system with high interference removal
- Sensitivity:  ${}^7\text{Li} \geq 65$  (Mcps/ppm)
- Detection Limits:  ${}^{32}\text{S}$  (same as  $\text{SO}^+$ ) < 200ppt;  ${}^{31}\text{P}$  (as  $\text{PO}^+$ ) < 50ppt;  ${}^{78}\text{Se}$  < 1ppt
- Isotope Ratio Precision:  ${}^{107}\text{Ag}/{}^{109}\text{Ag} < 0.1$  (% RSD);  ${}^{87}\text{Sr}/{}^{86}\text{Sr} \leq 0.2$  (% RSD)
- 3 gas channel operation (He, O<sub>2</sub>, NH<sub>3</sub>)
- Quartz torch
- Low flow concentric nebulizer
- Four-way peristaltic pump
- Nebulization chamber cooled by Peltier effect
- Vacuum system :  $< 1 \times 10^{-6}$  mbar

**NWR213 TECHNICAL DETAILS:**

- Homogenized and stabilized Nd:YAG@213 nm Q-Switched laser source
- Laser pulse energy: > 6 mJ/pulse
- Pulse duration: < 4 ns
- Repetition rate: 1-20 Hz
- Active spot selection: circular and rectangular spots from 4 to 250  $\mu\text{m}$  in 1  $\mu\text{m}$  increments
- Ablation chamber dimensions: 100 mm x 100 mm x 20 mm (L x W x H)
- XY Stage: 100 mm x 100 mm
- Stage step resolution along x,y,z < 1  $\mu\text{m}$
- Dual Concentric Injector: interface with ICP-MS supporting ultrafast washout (0.7 s) for high resolution imaging or low concentration analytes



**FURTHER INFORMATION:**

- <https://www.thermofisher.com/order/catalog/product/BRE731436>
- <https://www.icpmslasers.com/products/esl213/>

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