SPECTRO ARCOS MV: Advanced Analysis for Agronomy and More at the University of Padua

SPECTRO ARCOS Benefits

- Most advanced elemental analysis of metals, chemicals, petrochemicals, & more for academia & industry
- Highest-performance ICP-OES lab analyzer, with simultaneous spectrum capture between 130 nm and 770 nm
- Best-in-class performance for challenging elements, including halogens
- Exclusive MultiView — true axial plus true radial plasma observation in a single instrument
- No external chiller
- No argon purging
- Advanced software / ease of use
- Lower total costs of ownership

From 1592 to 1610, Galileo Galilei performed astronomical work at the University of Padua, Italy, that made him the father of modern science. Today, some of his successors concentrate on more earthbound subjects — in the university's Department of Agronomy, Food, Natural Resources, Animals, and Environment (DAFNAE).

Dr. Massimo Cagnin directs DAFNAE's laboratory. He oversees elemental analysis of plant, animal, soil, and microorganism samples for his colleagues, as well as for scientists from other institutions and from industry. The lab enables research in agronomy and soil science, animal science, ecology and environmental science, entomology, food science and technology, genetics and genomics, microbiology, and plant science.

The Challenges

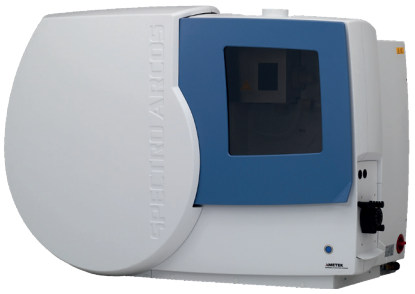
"Everything arrives in my lab," says Dr. Cagnin. "Because sooner or later, a researcher in any of those fields has to analyze some elements."

That extremely wide variety of samples presents challenges for Dr. Cagnin and his five colleagues in the department's analytical group.

"We get some strange metrics," he says. "Because all these researchers are trying to find new things to explore. When possible, we follow methods such as the U.S. EPA protocols for soil and water analysis. But 70 percent of our measurements are new! So we have ourselves to write the new story."

"Another major goal for many analyses is to understand how microelements in the soil are available to plants," adds Dr. Cagnin. "Bioavailability is the new frontier."

Many bioavailability studies highlight essential micronutrients such as chlorine (Cl). Unfortunately, conventional spectrometers lack required sensitivities for reliable measurement of chlorine and other halogens. These challenges impacted the DAFNAE lab's recent search for a new analyzer. As did a final, crucial factor: plasma view. Most spectrometers are based on either axial or radial plasma-view technology, depending on their target elements. (So-called dual-view models still favor one view, compromising performance on the other.) To accommodate their cornucopia of samples, Dr.



Cagnin and his colleagues briefly considered buying two spectrometers.

The Instrument

Fortunately, one instrument met all the lab's demands: the SPECTRO ARCOS MultiView inductively coupled plasma optical emission spectrometry (ICP-OES) analyzer. Its exclusive MultiView mechanism literally "turns" the SPECTRO ARCOS from a dedicated radial-view into a dedicated axial-view instrument — or vice-versa — in 90 seconds. Its powerful 2000 W generator handles high levels of total dissolved solids (TDS) and organics. Its air-cooled design eliminates the need for a costly, breakdown-prone external chiller. Its sealed optics means it doesn't demand constant argon (Ar) purges or additional gases such as nitrogen (N2). And its OPI-Air interface eliminates the need for air compressors / air jets or nitrogen generators.

The Results

Choosing the SPECTRO ARCOS MultiView analyzer has given DAFNAE's lab the comprehensive capabilities it needs.
"First of course, nobody else was able to analyze chlorine," says Dr. Cagnin. "The ARCOS is a two-for-one instrument. So you have radial plasma view for analysis of chlorine or other difficult measurements. The introduction system, the robust generator system — they support these hard metrics, when you have soil samples with very high salinity, and organics.

"Then for perhaps bioavailability studies, you can go to axial for accuracy in trace elements. And for statistical analysis, with one simple run we can give researchers more than 60 elemental measurements."

"If the software doesn't work, it's like a Ferrari with bad tires. But with SPECTRO, the software is close to perfect. It's very useful, friendly, and helps the operator to work very well. And for instance, when we develop a method for analyzing wine, we can just take the file and share the method with colleagues who have another SPECTRO ICP. We share the method, but not the wine …"

Dr. Cagnin sums up: "When you come in the door and ask for elemental analysis, my answer is always, 'Yes, I can do it.' Because if this lab can't, nobody can. Maybe it takes time, maybe it takes a new method. But when you have an ICP-OES that works this well, for sure you can provide the answer."

About DAFNAE at UNIPD

Founded in 1222, the University of Padua (UNIPD) is one of Italy's leading universities. Its Department of Agronomy, Food, Natural Resources, Animals and Environment (DAFNAE) combines innovative teaching and up-to-date research to promote the quality of human life, the competitiveness of the agrifood sector, and the sustainable use of biotic and abiotic natural resources.

About SPECTRO

SPECTRO is one of the world's leading suppliers of analytical instruments. Its analyzers use optical emission spectrometry (arc/spark OES, ICP-OES), X-ray fluorescence spectrometry (XRF), and inductively coupled plasma mass spectrometry (ICP-MS) technologies in the elemental analysis of materials for industry, research, and academia.

www.spectro.com

AMETEK®
MATERIALS ANALYSIS DIVISION

GERMANY
SPECTRO Analytical Instruments GmbH
Boschstrasse 10
D-47533 Kleve
Tel: +49.2821.892.0
Fax: +49.2821.892.2202
spectro.sales@ametek.com

U.S.A.
SPECTRO Analytical Instruments Inc.
91 McKee Drive
Mahwah, NJ 07430
Tel: +1.800.548.5809
+1.201.642.3000
Fax: +1.201.642.3091
spectro-usa.sales@ametek.com

CHINA
AMETEK Commercial
Enterprise (Shanghai) CO., LTD.
Part A1, A4 2nd Floor Building No.1 Plot Section
No.526 Fute 3rd Road East; Pilot Free Trade Zone
200131 Shanghai
Tel.: +86.21.586.851.11
Fax: +86.21.586.609.69
spectro-china.sales@ametek.com

Subsidiaries: ▶**FRANCE:** Tel +33.1.3068.8970, Fax +33.1.3068.8999, spectro-france.sales@ametek.com, ▶**GREAT BRITAIN:** Tel +44.1162.462.950, Fax +44.1162.740.160, spectro-uk.sales@ametek.com,
▶**INDIA:** Tel +91.22.6196 8200, Fax +91.22.2836 3613, sales.spectroindia@ametek.com, ▶**ITALY:** Tel +39.02.94693.1, Fax +39.02.94693.650, spectro-italy.sales@ametek.com,
▶**JAPAN:** Tel +81.3.6809.2405, Fax +81.3.6809.2410, spectro-japan.info@ametek.co.jp, ▶**SOUTH AFRICA:** Tel +27.11.979.4241, Fax +27.11.979.3564, spectro-za.sales@ametek.com,
▶**SWEDEN:** Tel +46.8.5190.6031, Fax+46.8.5190.6034, spectro-nordic.info@ametek.com.