

ACCURATE, RELIABLE, COST-EFFECTIVE METAL ANALYSIS IN FOOD AND AGRICULTURE

AA. MP-AES. ICP-OES. ICP-MS. ICP-QQQ

The elements found in food and water can range from nutritionally beneficial to highly toxic, depending on the element concerned, its concentration, and its chemical form. Accurately quantifying these elements is not only vital to food safety and consumer health, but can also be used to confirm a food's origin, since the elemental content can be used to determine provenance.

Agilent atomic spectroscopy solutions

- Accurate, reliable, and economical atomic absorption spectrometers (AA) are ideal for low numbers of samples or when measuring only a few elements.
- The Agilent microwave plasma atomic emission spectrometer (MP-AES) runs on air, enabling unattended multi-element analysis without flammable or expensive gases – an ideal cost-effective alternative to AA.
- The Agilent inductively coupled plasma optical emission spectrometer (ICP-OES) provides simultaneous elemental analysis, industry-leading sample throughput and lowest cost of ownership.
- Agilent ICP mass spectrometers (ICP-MS and ICP-QQQ) have the broadest elemental coverage, highest matrix tolerance, and lowest detection limits. ICP-MS also supports speciated analysis with chromatography coupling, and provides a sensitive technique for monitoring nanoparticles such as SiO_2 , TiO_2 and ZnO from food additives and packaging.



WHAT OUR CUSTOMERS SAY

Watch Dr. Panayot Petrov, from LGC, Teddington, UK, explain how Agilent ICP-MS helps his lab examine nanoparticles in food and the environment and how coupling with HPLC is used to perform speciation of heavy metals in food.

Visit:

[www.agilent.com/chem/
food_testimonial](http://www.agilent.com/chem/food_testimonial)



Agilent Technologies



Atomic absorption spectroscopy (AA)

- Low system cost
- Low to moderate productivity
- High ppb to %
- Up to approximately 3% total dissolved solids

The Agilent low-cost AA is commonly used for typical food analyses such as milk powder, shellfish, and plant tissue. It has unique fast sequential capability, simplicity of operation, and very good sensitivity.



Microwave plasma atomic emission spectroscopy (MP-AES)

- Moderate to high productivity
- Medium ppb to %
- Low running cost
- Up to approximately 3% total dissolved solids

The Agilent MP-AES saves you money because it runs on air. MP-AES delivers accurate and reliable performance for typical food samples, including fruit juice and rice flour, and common soil analysis of bioavailable cations and trace toxic metals.



Inductively coupled plasma optical emission spectroscopy (ICP-OES)

- Highest productivity (<30 s per sample) with the AVS 6/7
- Low ppb to %
- Up to 30% total dissolved solids

The Agilent 5110 ICP-OES is the world's most productive ICP-OES. Utilizing a vertical plasma for axial and radial emissions, it delivers excellent sensitivity and high matrix capability. Common applications include trace metals in soil extractions, fertilizers, and bovine samples.



Inductively coupled plasma mass spectrometry (ICP-MS and ICP-QQQ)

- High productivity (<60 s per sample) with ISIS 3
- Low ppq to %
- Up to 25% total dissolved solids with optional ultra high matrix introduction (UHMI)
- Speciation and nanoparticle characterization

The Solution-Ready Agilent 7800 quadrupole ICP-MS provides a streamlined approach to routine food analysis applications, while the Agilent 7900 ICP-MS offers superior detection limits, wider dynamic range and greater flexibility. The Agilent 8900 ICP-QQQ uses MS/MS mode to resolve interferences, providing the accuracy needed for difficult elements and advanced applications. ICP-MS applications include quantifying toxic trace elements in foodstuffs, arsenic speciation in rice and fruit juice, measuring trace elements in malt spirit beverages and edible oils, and characterizing the nanoparticle content of foods and food packaging.



For more information:
Contact your local Agilent
representative or visit:

www.agilent.com/chem/food

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