

MOA IV Spark Emission Spectrometer



Spark emission spectroscopy provides the fastest, simplest and most cost effective technique for the routine analysis of both alloying and trace elements in metals for foundries, manufacturers and contract laboratories.

The MOA IV spark emission spectrometer has been designed to provide the best accuracy and precision for the analysis of aluminum, brass, bronze, cast iron, cobalt, copper, lead, magnesium, mild steel, nickel, stainless steel, solder, tin, titanium and zinc alloys on the same instrument for every element.

Spectrometer

The revolutionary design of the instrument provides full wavelength coverage from the deep ultraviolet to the near infrared using state of the art CCD detectors and multiple spectrometers within the optics cabinet.

The spectrometer is filled with inert gas which is scrubbed and recycled, eliminating the need for expensive and noisy vacuum pumps.

Temperature	20.00 ± 0.05 °C
Profile	All wavelengths simultaneously

Primary Spectrometer	
Mount	Paschen Runge
Focal Length	0.6 m
Wavelength Coverage	130-600 nm
Dispersion (typical)	0.69 nm/mm
Resolution (typical)	0.005 nm/pixel
Pixels	>73,000

Secondary Spectrometer	
Mount	Flat Field
Focal Length	0.4 m
Wavelength Coverage	600-800 nm
Dispersion (typical)	1.5 nm/mm
Resolution (typical)	0.01 nm/pixel
Pixels	>7,300

Since the MOA IV spectrometer has access to multiple analytical lines for all of the elements, there is no need to compromise on wavelength selection as must be done on photomultiplier based instruments.

In addition, the use of homologous pairs improves the accuracy and precision of the measurements compared to the use of a single internal standard wavelength in older instrumentation.

For ultra-trace analysis at the ppm level and below, simultaneous background correction may be used to improve accuracy by eliminating variations in sampling between different samples and standards.

Source

The MOA IV uses a solid state high voltage spark and features a proprietary monitoring circuit that turns off the source in the unlikely event that abnormal voltages are observed at the sample stand.

Instrument Control	Fiber Optic
Gas	Argon, typically 7 LPM during analysis
Fast Stand Flush	Prior to start of analytical measurement cycle
Power Level	Multiple, computer controlled

Software Features

The computer interacts with the instrument using Ethernet cables which are not susceptible to the electronic noise that interferes with standard USB communications.

Menu Driven	Shortcut keys for common functions
Manual	Linked to each data screen
Analytical Programs	Unlimited
Analytical Program Calibration	Automatic or manual
Interference Corrections	Unlimited incorporated into curve fit routine
Specification Checking	Automated with user defined ranges
QC Checking	Automated with user defined standards
Type Standardization	Automated with user defined standards
Instrument Diagnostics	Basic troubleshooting
Methods Development for Advanced Users	Collect complete spectrum from samples Extensive graphics for spectral analysis Ability to reprocess previously collected data
Results Storage	Save by time, analytical program or user name
Reports	Text or graphics Export as CSV file User defined templates

Installation & Training

The instrument can be quickly and easily installed almost anywhere. Just uncrate it and plug it in. An operator can be trained in the basic use the MOA IV in a day. Advanced training on creating new analytical programs, calibration, diagnostics and methods development is also available either on-site or at the MOA facility for a nominal fee.

General Specifications

The MOA IV spectrometer is proudly manufactured in the USA to the highest possible standards.

Computer	Desktop PC
Memory	4 GB
Monitor	43 cm
Disk Storage	1 Tb
Operating System	Microsoft Windows® 10
Software	MOA (64 Bit Windows ®)
Printer	300 dpi B/W laser
Environment	10-30 °C 20-60% RH
Voltage	110/240 VAC 50/60 Hz
Power	1.5 kw
Dimensions	84 x 136 x 108 cm (LHD)
Weight	150 kg

Contact details

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Analytical Program Ranges

	Iron/Steel	Aluminum	Brass	Nickel	Lead/Tin	Zinc	Magnesium
Ag			0.001-10				
Al	0.001-10	30-100	0.0002-20	0.001-10	0.0002-0.1	0.001-10	0.005-30
As	0.002-1	0.001-0.3	0.001-3	0.005-2	0.0002-2	0.001-1	
Au			0.0002-0.5		0.001-0.5		
B	0.0003-0.5	0.0001-0.1	0.0003-0.2	0.0005-5			
Ba	0.0005-3	0.001-0.5			0.00005-0.1		
Be	0.001-0.3	0.0001-0.3	0.0001-0.3	0.003-0.3	0.0002-0.1	0.0003-0.1	0.0001-0.2
Bi	0.001-0.3	0.001-1.5	0.0002-0.5	0.003-0.3	0.00005-50	0.0005-0.1	
C	0.001-4	0.001-0.1	0.003-0.3	0.001-3			
Ca	0.001-0.3	0.0001-0.5		0.001-0.3	0.0005-2	0.0005-0.5	0.005-2
Cd	0.002-0.5	0.001-0.2	0.0002-3	0.005-0.3	0.0001-3	0.0005-0.5	0.001-0.5
Ce	0.005-0.3	0.005-0.5		0.005-0.5			0.005-5
Co	0.001-30	0.0005-3	0.001-0.5	0.003-30	0.002-2	0.001-0.3	0.005-1
Cr	0.001-40	0.0005-4	0.0002-3	0.005-25	0.001-0.3		0.005-1
Cu	0.0005-10	0.0005-20	30-100	0.0005-30	0.0001-8	0.0005-10	0.001-10
Dy							0.01-1
Fe	30-100	0.001-20	0.001-12	0.001-40	0.0005-0.5	0.0003-2	0.002-0.5
Ga		0.001-0.5					
Gd							0.01-5
Hf	0.001-2			0.05-3			
In		0.001-1.5					
La	0.001-2			0.001-2			0.01-5
Li		0.0001-2					
Mg	0.0002-0.3	0.0002-20	0.0003-0.2	0.001-8		0.0001-0.3	30-100
Mn	0.001-25	0.0005-12	0.0001-12	0.005-25		0.001-0.5	0.001-5
Mo	0.002-15	0.001-0.5		0.005-30			
N	0.001-0.1						
Na		0.0001-0.5			0.0001-0.5		
Nb	0.001-5		0.0005-2				
Nd							0.01-1
Ni	0.001-45	0.003-20	0.0005-60	30-100		0.005-1	0.005-2

	Iron/Steel	Aluminum	Brass	Nickel	Lead/Tin	Zinc	Magnesium
O	0.001-0.1		0.001-0.1				
P	0.001-2		0.0003-5	0.005-2	0.001-0.1		
Pb	0.001-1	0.001-10	0.001-30	0.001-0.1	0.0001-100	0.0002-2	0.005-1
Pr							0.01-5
S	0.002-1		0.0003-0.4	0.003-0.4	0.0005-0.2		
Sb	0.002-0.5	0.001-0.5	0.0005-0.5	0.01-0.5	0.0002-20	0.001-0.5	
Se	0.01-0.3		0.0005-0.3	0.001-0.1	0.001-0.1		
Si	0.002-10	0.001-25	0.001-8	0.003-5			0.001-1
Sn	0.002-1	0.02-30	0.0003-20	0.003-0.5	0.0003-100	0.0002-3	0.002-6
Sr		0.0001-0.5			0.001-0.5		
Ta	0.1-4			0.01-5			
Te	0.005-0.3		0.002-1.5		0.0005-0.2		
Ti	0.0003-3	0.0002-1	0.001-1	0.002-5		0.001-0.5	
V	0.001-6	0.001-0.7		0.001-5			
W	0.001-25			0.005-20			
Y	0.01-0.5						0.001-5
Zn	0.005-0.5	0.003-10	0.001-50	0.01-1	0.0005-5	30-100	0.002-30
Zr	0.001-1	0.001-0.5	0.001-0.5	0.001-2			0.002-5