

Q2 ION

Metals Analysis Made Easy



*Your Complete Source for
Testing Equipment Since 1969!*

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Berg Engineering & Sales Company, Inc.

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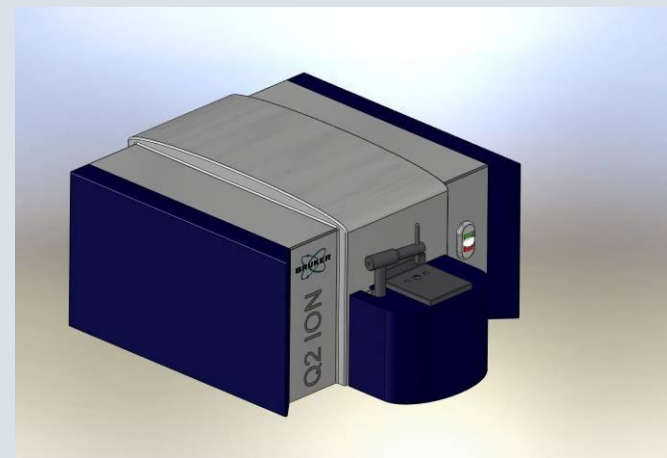
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Q2 ION

Metals Analysis Made Easy

- System overview
 - Properties & Features
- Technology
 - Ultra-compact design, patented optics, plasma generator, spark stand
- Software
 - QMatrix, ScanView, DIA
- Applications
 - Iron & Steel, Aluminium, Copper
- Accessories
 - Transport Case





Product Idea – we wanted to create the

- **Most Popular spectrometer**

Q2 ION is a metal analyzer affordable for every company in all parts of the world

- **Smallest spectrometer**

Q2 ION is the smallest & lightest stationary UV-OES and can easily be transported

- **Versatile spectrometer**

Q2 ION is – though small – a true multi-matrix OE-spectrometer, ideal for inspection companies, contract laboratories, fabricators

- **PMI+ spectrometer**

Q2 ION is for advanced PMI applications with best-in-class UV-element performance, in future also with Nitrogen for Duplex steels



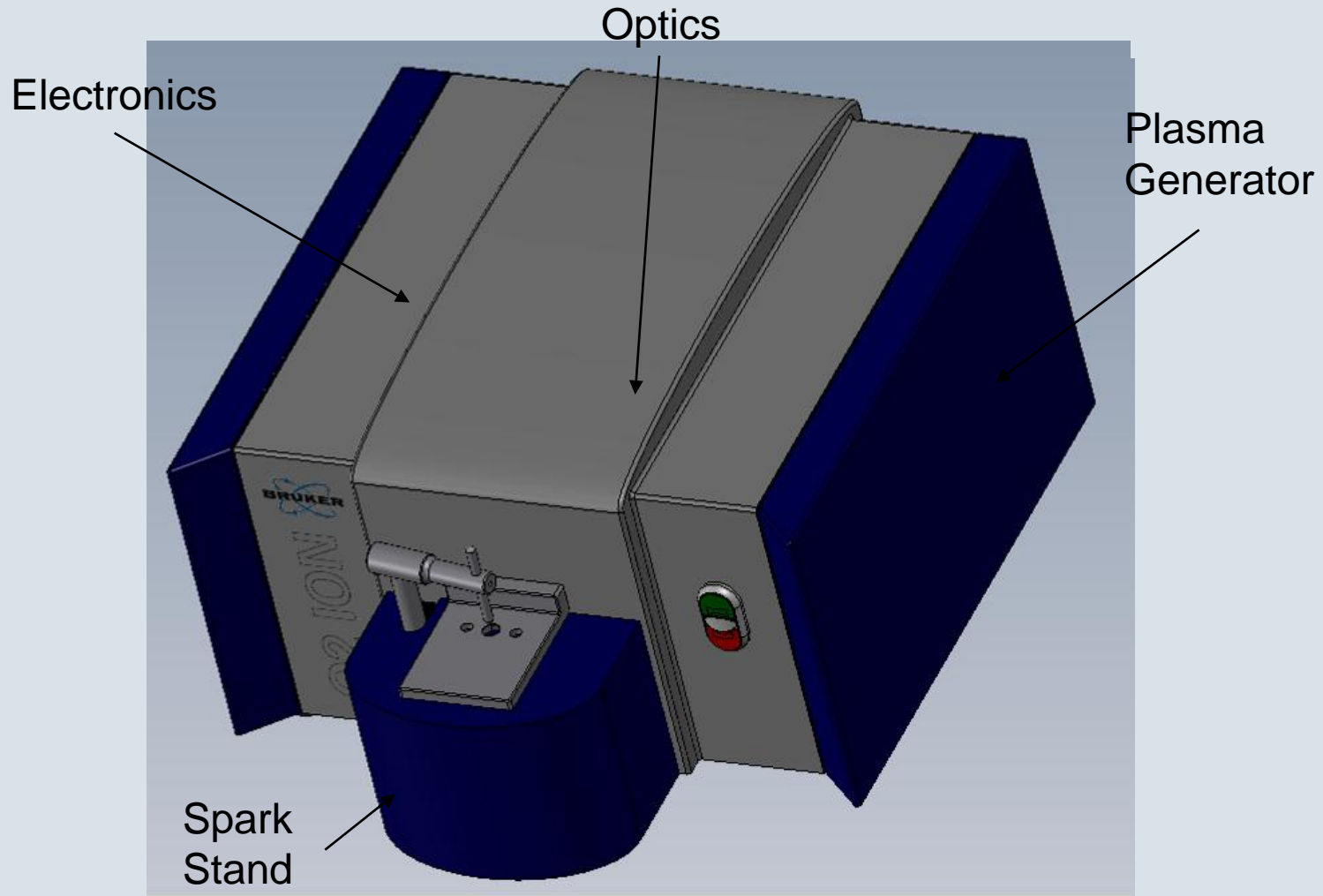


Unique Key Features

- Simple installation
- GUI for simple routine operation
- Good analytical performance (best-in-class)
- Versatile, universal, empirical multi-matrix calibrations
- Outstanding price/performance ratio
- High analytical stability thru automatic ambient compensation (patented)
- Low maintenance



System Overview



Technology

Ultra-compact design



- Very small: 44 x 22 x 39 cm
- Very light: <20 kg
- Easy to place, relocate, or even take on-site
- Possible due to:
 - Highly integrated components
 - Extremely small optics
 - Plastic housing with special shielding
- CE & EMC compliant
- Extremely robust



Technology Patented Optics



- Monolithic block
- Self-supporting, light- & gas-tight tank
- Automatic Ambient Compensation ensures stable operation without stabilising time and heating
- Self-focussing compensation tubes
- Operating range 10° to 45° C
- Flatfield CCD optics
- Full spectral coverage
- Neon spectrum allows for Standardless Standardisation (SLS)
- Very low consumption
150 l/h AF, 1 l/h OF, 1 l/h SB
- At 40 samples/day, a bottle lasts 8 weeks!



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Software

- QMatrix
- ScanView
- DIA basic
- BQPublisher
- Grade Library



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Grade Library

- Standard Grade Library
 - ~130 Iron & Steel Alloys
 - ~50 Copper Alloys
 - ~30 Aluminium Alloys
- External limits will be filled
- Customer needs to accept disclaimer note
- DIA quality database functionality

The screenshot shows a software window titled "Quality" with a search bar and a "Quality Group" dropdown. The main area is divided into three sections:

- Quality header:** A table listing various grades with columns for Quality, Description, Base, and Quality Group. The first row is selected, showing "1 1/4 Cr / ASTM K11537".
- Quality version:** A table showing version information for the selected grade, including Version, modified on, User, and Valid from.
- Quality detail:** A table showing the chemical composition for the selected grade, with columns for No., Element, Dimension, ext Min, int Min, Target, int Max, ext Max, Formula, and Precision.

Quality header				Quality version			
Quality	Description	Base	Quality Group	Version	modified on	User	Valid from
1 1/4 Cr / ASTM	K11537	Fe		1	10.03.2010 19:45:01	SUPERVISOR	10.03.2010 19:45:01
2 1/4 Cr	K21590	Fe					
4130	G4130	Fe					
4140	G4140	Fe					
4340-L6	G43400	Fe					
4620 / S-5	G46200	Fe					
4820	G48200	Fe					
5 Cr	K41545	Fe					
8620	G86200	Fe					
9 Cr	K90941	Fe					
A-10	T30110	Fe					

Quality detail									
No.	Element	Dimension	ext Min	int Min	Target	int Max	ext Max	Formula	Precision
1	C	%		0,05			0,15		+
2	Cr	%		1			1,5		+
3	Mn	%		0,3			0,8		+
4	Mo	%		0,3			0,6		+
5	P	%					0,03		+
6	Si	%		0,5			1		+
7	S	%					0,03		+



Typical Performance Example Cast Iron



12.03.2010 13:22:00

QMatrix Analysis Results

Sample Identification										
SampleNo	3/2 17631 739									
	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	Al
	%	%	%	%	%	%	%	%	%	%
1.	3.684	1.476	0.566	0.056	0.0079	0.106	<0.010	0.035	0.050	0.013
2.	3.598	1.445	0.575	0.053	0.0080	0.103	<0.010	0.027	0.048	0.013
3.	3.628	1.508	0.571	0.056	0.0080	0.104	0.011	0.035	0.054	0.014
4.	3.592	1.493	0.570	0.058	0.0085	0.108	0.011	0.034	0.051	0.013
Ø	3.626	1.481	0.571	0.056	0.0081	0.105	<0.010	0.033	0.051	0.013
σ	0.042	0.027	0.0037	0.0021	0.00027	0.0022	0.00082	0.0039	0.0025	0.00058
υ	1.158	1.823	0.648	3.750	3.333	2.095	8.200	11.82	4.902	4.462
	Mg	Co	Nb	Ti	V	W	Fe			
	%	%	%	%	%	%	%			
1.	<0.0050	<0.0050	<0.0050	0.052	0.0081	0.021	93.90			
2.	<0.0050	<0.0050	<0.0050	0.051	0.0061	0.014	94.03			
3.	<0.0050	<0.0050	<0.0050	0.052	0.0083	0.014	93.92			
4.	<0.0050	<0.0050	<0.0050	0.053	0.0068	0.022	93.96			
Ø	<0.0050	<0.0050	<0.0050	0.052	0.0073	0.018	93.95			
σ				0.00082	0.0011	0.0044	0.057			
υ				1.577	15.07	24.44	0.061			



Applications

Iron & Steel Calibration



Q2 Fe-Base Calibration Ranges

Elements	Fe - Global		Low Alloy Steel		Cast Iron		Cr Cr/Ni Steel		Cr Cr/Ni Steel		Tool Steel		Mn Steel	
	Fe100		Fe110		Fe120		Fe130		Fe131		Fe140		Fe150	
	min %	max %	min %	max %	min %	max %	min %	max %	min %	max %	min %	max %	min %	max %
C	0,005	4,40	0,005	1,50	1,70	4,50	0,005	1,70	0,005	0,40	0,10	2,60	0,005	1,50
Si	0,01	6,00	0,01	1,50	0,10	5,00	0,005	4,00	0,005	1,30	0,01	1,00	0,01	1,80
Mn	0,005	19,00	0,003	2,50	0,005	1,50	0,005	19,00	0,005	1,60	0,005	1,60	2,00	19,00
P	0,010	1,20	0,003	0,08	0,003	1,20	0,003	0,07	0,003	0,05	0,003	0,06	0,003	0,11
S	0,003	0,50	0,003	0,10	0,003	0,15	0,003	0,10	0,003	0,10	0,003	0,10	0,003	0,25
Cr	0,01	28,00	0,003	5,50	0,01	1,40	7,00	27,00	7,00	27,00	0,01	6,00	0,01	2,50
Mo	0,01	11,00	0,01	1,50	0,01	1,50	0,01	3,00	0,01	5,50	0,01	10,50	0,01	1,50
Ni	0,01	50,00	0,01	6,50	0,01	1,80	0,01	22,00	0,01	50,00	0,01	0,26	0,01	2,00
Cu	0,005	8,00	0,005	0,80	0,005	1,50	0,003	8,00	0,003	3,50			0,005	0,30
Al	0,005	1,20	0,003	1,20	0,003	0,09	0,003	0,05	0,003	2,80			0,003	0,21
Mg	0,005	0,12			0,005	0,12								
Co	0,005	10,00	0,005	0,35	0,005	0,12	0,005	0,60	0,005	10,00	0,005	9,00		
Nb	0,005	3,00	0,005	0,35	0,005	0,07	0,005	3,00	0,005	0,65				
Ti	0,003	2,50	0,003	0,35	0,003	0,35	0,003	0,45	0,003	2,50				
V	0,01	10,00	0,005	0,90	0,005	0,55	0,005	0,90	0,005	0,55	0,005	11,00	0,01	0,25
W	0,10	19,00	0,03	3,30	0,05	1,50					0,05	19,00		
Fe	Reference		Reference		Reference		Reference		Reference		Reference		Reference	



Applications

Aluminium Calibration



Q2 Al-Base Calibration Ranges

Elements	Al Global		Al-Si		Al-Cu		Al-Zn	
	Al100		Al120		Al130		Al150	
	min %	max %	min %	max %	min %	max %	min %	max %
Si	0,005	22,00	5,00	22,00	0,005	1,30	0,005	0,45
Fe	0,02	2,20	0,03	1,50	0,02	0,65	0,02	0,65
Cu	0,005	21,00	0,005	4,40	1,00	21,00	0,005	2,80
Mn	0,005	12,00	0,005	0,55	0,005	1,10	0,005	0,55
Mg	0,005	10,00	0,005	1,50	0,005	1,50	0,30	5,00
Cr	0,005	0,35	0,005	0,15	0,005	0,14	0,005	0,40
Ni	0,005	4,00	0,005	4,50	0,005	0,20	0,005	0,055
Zn	0,005	11,00	0,005	0,33	0,005	0,45	1,00	11,00
Ti	0,002	0,45	0,005	0,25	0,005	0,28	0,002	0,22
Pb	0,05	1,00	0,05	0,60	0,005	0,06	0,005	0,05
Sn	0,01	0,32	0,01	0,33	0,005	0,06		
V	0,005	0,11	0,005	0,06	0,005	0,11		
Zr	0,005	0,24	0,005	0,11	0,005	0,24		
Al	Reference		Reference		Reference		Reference	



Applications

Copper Calibration



Q2 Cu-Base Calibration Ranges

Elements	Cu - Global		Cu-Zn		Cu-Zn-Ni		Cu-Ni		Gun Metal		Cu-Sn-Pb		Cu-Al	
	Cu100		Cu120		Cu130		Cu140		Cu150		Cu160		Cu170	
	min %	max %	min %	max %	min %	max %	min %	max %	min %	max %	min %	max %	min %	max %
Zn	0,01	50,00	7,00	45,00	10,00	35,00	0,01	0,90	2,00	7,50	0,01	1,50	0,01	0,90
Pb	0,05	22,00	0,005	3,30	0,005	1,40	0,01	0,06	0,05	6,50	0,05	23,00	0,05	0,35
Sn	0,005	21,00	0,005	2,50	0,005	0,50	0,005	0,07	1,50	9,00	0,80	22,00	0,005	0,40
P	0,01	1,10	0,005	0,25	0,005	0,016	0,005	0,40	0,01	0,25	0,005	1,10	0,005	7,00
Mn	0,10	7,00	0,005	5,50	0,005	0,90	0,005	2,30	0,005	0,55	0,005	0,45	0,01	6,50
Fe	0,005	6,50	0,005	5,00	0,005	1,00	0,005	2,70	0,005	0,40	0,005	0,35	0,01	7,00
Ni	0,01	35,00	0,01	5,00	6,00	20,00	7,00	35,00	0,01	3,00	0,01	1,60	4,00	12,50
Si	0,005	7,50	0,005	6,00	0,005	1,00			0,005	0,15				
Al	0,005	12,50	0,003	9,00			0,003	0,025	0,005	0,23	0,003	0,12		
S	0,005	0,13	0,005	0,05			0,005	0,05	0,005	0,18	0,005	0,07		
As	0,005	0,50	0,005	0,25	0,005	0,06			0,01	0,28	0,005	0,12		
Bi	0,01	4,50	0,005	4,50					0,01	2,50				
Se	0,01	1,40							0,01	1,40				
Cu	Reference		Reference		Reference		Reference		Reference		Reference		Reference	



Documentation

Short Help Q2 ION








Q2 ION Shorthelp

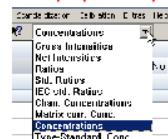
List of functions and maintenance



Upper Icon Bar













-  **Open Method:** opens the dialogue to load a different method
-  **change user:** allows to login under a different user name & password
-  **Measure Standardisation Samples:** opens the dialogue to measure the standardisation samples
-  **Measure Type-Standardisation Samples:** opens the dialogue to measure the Type Standardisation Samples
-  **Reset Counter:** resets the daily counter, displayed in the lower status bar.
-  **Info:** opens the window, showing information about the installed QMatrix version
-  **Help:** opens the operation manual, QMatrix user manual and DIA manual



Change calculation mode: using this select field a different calculation mode can be chosen. The results displayed on the screen will instantly be re-calculated and the display refreshed.

Lower Icon Bar



-  **Start Analysis:** starts the next sparking
-  **Stop Analysis:** Stops the currently running measurement
-  **Finalise Analysis:** finalises the analysis, stores, prints or exports the results depending on the current setup
-  **Cancel Analysis:** Cancels the measurements and clears the screen
-  **Store Analysis:** opens the dialogue to store the current results to the database
-  **Print Analysis:** prints the currently displayed analyses results
-  **Send Analysis to:** sends the currently displayed results as an attachment (Excel compatible format) to a generated e-mail
-  **Quality Identification:** Scans the quality database for matching entries to identify an unknown sample (PMI), (currently not yet implemented)
-  **Enter Sample Identification:** opens the dialogue to enter the sample IDs
-  **Measurement Progress:** Shows the progress of the current measurement sequence



Documentation

Certificate of calibration



Certificate of Calibration

Bruker Elemental GmbH
Kastellstrasse 31 - 35
D-47546 Kalkar
Germany

Delivery Object: Spectrometer System
Instrument Type: Q2 ION

We hereby confirm, that the a.m. spectrometer Q2 ION is factory calibrated, tested, and adjusted by Bruker Elemental GmbH. The Results are according to the specification of the instrument.

Certified Reference Samples were used for calibration.

We herewith guarantee, that the Spectrometer is made of the best material and with first class workmanship, brand new and unused.

Kalkar, Germany



Mischa Ounanian
Product Manager



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Special Option: Case for Portable Use

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- Ideal for Inspection Companies
- **Retractable extension handle**
- **4 strong polyurethane wheels with stainless steel bearings**
- Easy open Double Throw latches
- Open cell core with solid wall design - strong, light weight
- O-ring seal
- Automatic Pressure Equalization Valve
- Fold down handles
- Stainless steel padlock protectors
- 3 level Pick N Pluck™ with convoluted lid foam
- **Watertight, crushproof, and dust proof**
- Two sizes



Q2 ION Flyer

Braker Elemental

Q2 ION - Metals Analysis made easy

- Ultra-Compact Spark-OES Metals Analyzer**

Braker Elemental's all new spark spectrometer Q2 ION elevates metal analysis into new levels of simplicity and ease-of-use. Today Q2 ION is the smallest and lightest ultra-compact spark emission spectrometer for metals analysis available. It is a versatile multi-matrix system for comprehensive incoming material inspection and quality assurance of metal alloys. Its affordable price and low operational costs make it the ideal tool for smaller and medium-size businesses.

Q2 ION covers all major alloying elements in many applications such as Ferrous alloys, Aluminium, Coppers, and many more. It ideally addresses the requirements of small and mid-size foundries, metal processing industries, fabricators, quality control departments, warehouses, metal recyclers, and even inspection companies.

Q2 ION - New Standard in compact Metals Analyzer

It's design makes Q2 ION ultra light (less than 44lbs/20 kg) so it can easily be hand-carried even to a nearby site for analysis. An optional case is also available. Despite its low weight, it is suitable for applications in which ruggedness is required. Q2 ION also defines new standards in ease-of-use. Place your sample onto the spark stand and press the start button. In less than thirty seconds you get the complete elemental composition of your metal.

Q2 ION - Patented Optical System

The new patented Flat Field CCD optics is a masterpiece of optics design and mechanical engineering. Active Ambient Compensation (AAC) provides maximum stability in a temperature range between 10 and 45° C (50 and 113° F). The high-definition CCD detector together with well-proven ClearSpectrum® technology provide best-in-class analytical performance.

think forward

Elemental Analysis

Detector with ClearSpectrum® Technology

Technical Data Q2 ION

Patented Optical System	<ul style="list-style-type: none"> Un-coated CCD detector with lowest dark current Flat field grating Full spectrum coverage: 170- 685 nm Resolution: 30 µm Argon purged for best transparency ClearSpectrum® technology for advanced spectra deconvolution Active Ambient Compensation (AAC) for operation between 10 and 45°C (50 and 113° F)
Analytical Solution Packages (ASP)	<ul style="list-style-type: none"> Different matrix calibration packages available ASPs cover all major elements & alloy groups Upgradable for future expansion
Source Generator	<ul style="list-style-type: none"> Maintenance-free, two phase PWM Generator Frequency 50 to 1000 Hz Spark & arc-like discharges from 10 µs to 2 ms
Sparkstand	<ul style="list-style-type: none"> Maintenance-free Argon consumption 2.5 l/min. during measurement Argon quality 4.8 (or better)
Software	<ul style="list-style-type: none"> Intuitive Windows® based software for simple routine operation Various user levels for secure and task-specific operations Functions for qualitative and quantitative analysis Complete QMatrix Software Suite including analysis database & interfaces to Office software Grade Library functions
Electrical Data	<ul style="list-style-type: none"> 100 to 240 V (50/60 Hz) 200 W during measurement, 50 W standby 16 A (240 V) slow blow fuse or 25 A (100 V) slow blow fuse
Dimensions & Weight	<ul style="list-style-type: none"> Width 440 mm / 17 inches Height 220 mm / 9 inches Depth 360 mm / 15 inches Weight ~ 19 kg / ~ 42 lbs

Typical Analysis Screen

Q2 ION

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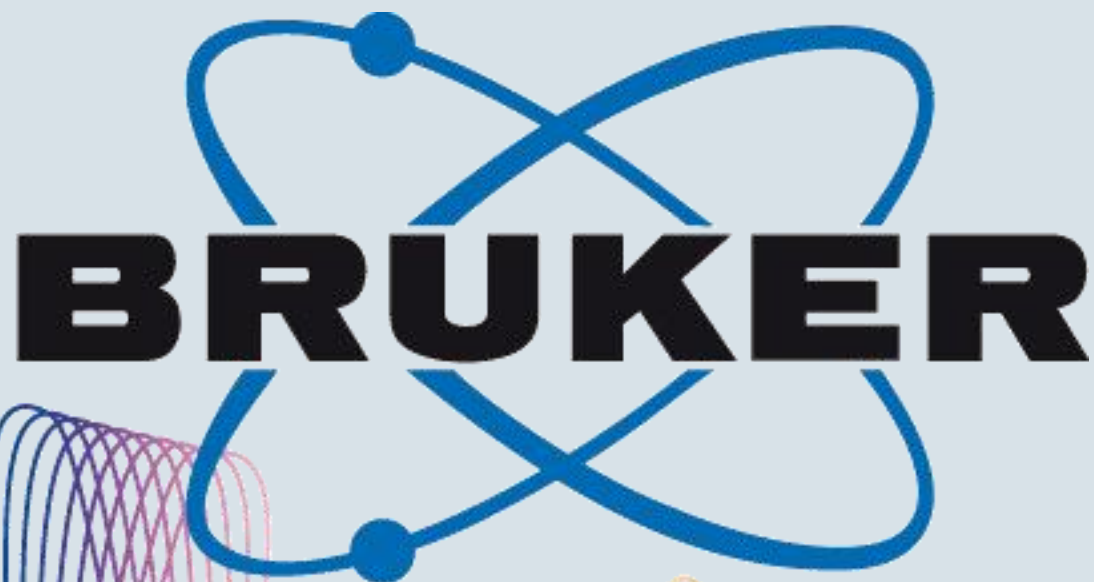
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Braker Elemental is constantly improving its products and reserves the right to change specifications without notice.



Thank you ! Questions ?



50 years of
innovation



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