



X-RAY FLUORESCENCE

S8 TIGER

Built on Experience, Powered by Innovation

Innovation with Integrity



S8 TIGER – built on experience, powered by innovation

Once again, we have redefined performance, efficiency and reliability and are proud to introduce the S8 TIGER™ Series 3.

For decades we have successfully built systems for Wavelength Dispersive X-ray Fluorescence Spectrometry (WDXRF). So, it is no exaggeration to say that we know our job inside out and how to find the right solution for any of your analytical challenges. No matter whether you need to obtain the best possible data for quality and process control or superb detection limits and precision in research and development.

Discover how the latest detector technology and software algorithms increase performance in precision and speed. See how a grabber that recognizes sample characteristics and selects the best measurement parameters on its own makes your work more efficient. And experience how predictive maintenance, checking the status of your instrument from anywhere, and immediate support when needed guarantee maximum uptime and reliability.

Our promise: The new S8 TIGER will revolutionize your possibilities and comprehensively expand your analytical capabilities using latest hard- and software, artificial intelligence, cloud computing, machine learning, and augmented reality.



Experience exceptional data quality with the **S8 TIGER Series 3**. Optimal excitation is ensured by up to **4 kW power** and **170 mA current**, resulting in maximum intensity for every element in any sample. The closed-coupled high-precision goniometer, high-resolution optics, and pioneering detector technology guarantee superior data accuracy.

Equipped with new **HighSense™** detectors and patented **SensorBoost™** signal processing, the **S8 TIGER** eliminates count rate limitations, offering higher analytical speed and excellent precision. Do you need even faster results? Switch to simultaneous mode using **Single-Element Channels** or the **Multi-Element Channel**.



Better data
quality and
faster results
than ever
before



Detector overview

Unlock high-speed analytical precision with HighSense detector technology

Analytical precision is the key to tighter process and quality control. It mainly depends on collected counts per element. When sample throughput is crucial and waiting for the analysis to finish is no longer acceptable, switch to the S8 TIGER Series 3.

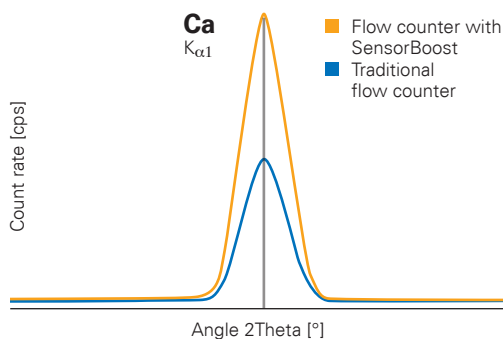
Reduce detector dead time. The multi-channel analyzer minimizes the dead time effect for flow and scintillation counters.

Analyze unknown samples with ease. DynaMatch™ generator technology allows analysis of unknown samples with major concentrations. The count rate is kept in the linear range by automatically adjusting the current.

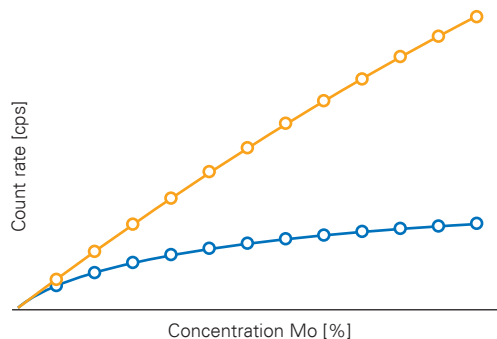
Enhance linear range and reduce measurement time. Bruker's patented SensorBoost technology doubles the linear detector range, reducing measurement time by 40% for major and medium concentrations.

Upgrade to HighSense XE semiconductor detector. The unique silicon-based detector offers maximum count rates of more than 12 Mcps, covering major elements up to 100%, and reduces spectral background – ideal for metals and minerals.

Boost sample throughput. Adding simultaneous detectors enhances analyzing speed and sample throughput. Single-Element Channels are perfect for very light elements. The Multi-Element Channel analyzes medium and heavy elements in parallel, saving 30 to 40% time in geology, metals, and mining.



Advantage of SensorBoost compared with conventional flow counter analyzing Ca – Higher usable count rate due to increased linear range



Advantage of HighSense XE compared with conventional scintillation detector

Flow Counter

- From Be to Zn with a thin window for optimal light element sensitivity
- Enhanced by multichannel analyzer
- Optionally with **SensorBoost** for two times larger linear range



HighSense GF

- Sealed proportional counter, without the need for gas, from C to Zn with a robust detector window
- Enhanced by multichannel analyzer
- Optionally with **SensorBoost** for two times larger linear range



Single-Element Channel

- Speed option with dedicated wavelength dispersive channels for single elements: B, C, Na, Mg, Al, and Si.



Detectors

- 1 Standard detectors
- 2 Upgrade detector versions
- 3 Optional simultaneous detectors



Scintillation Counter

- From Mn to Am
- Enhanced by multichannel analyzer



HighSense XE

- High-speed option for major and minor elements, from Mn to Am
- Semiconductor Si-based detector for usable count rates of more than 12 Mcps



Multi-Element Channel

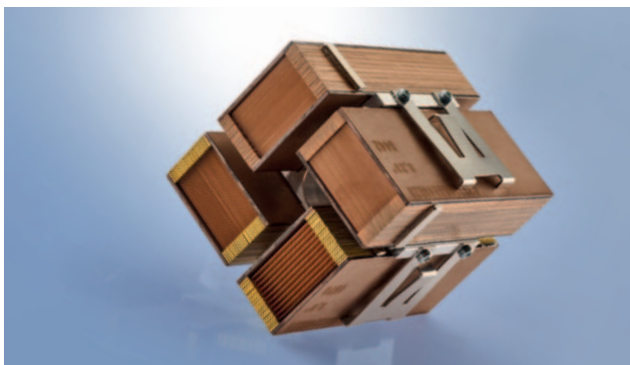
- High-speed option for simultaneous analysis with the HighSense XP EDXRF detector
- Ideal for the medium and heavy element range in geology, minerals, and metals

Customize to match your needs, upgrade to optimal performance

Already with the standard configuration of the S8 TIGER Series 3, you get excellent data. But there is more in the offer. You can upgrade the capabilities of the S8 TIGER now or in the future in more ways than with any other WDXRF spectrometer. You can:

- optimize the analysis of vital elements for intensity or resolution by adding two additional beam collimators,
- switch from manual masks to automated handling of up to 5 different sample sizes with the automatic mask changer,
- enhance the peak-to-background ratio by adding more beam filters,
- expand the analytical capabilities and choose – out of 14 – up to five additional analyzer crystals or multilayer optics, or
- switch from pure sequential detection by adding simultaneous detection for higher speed.

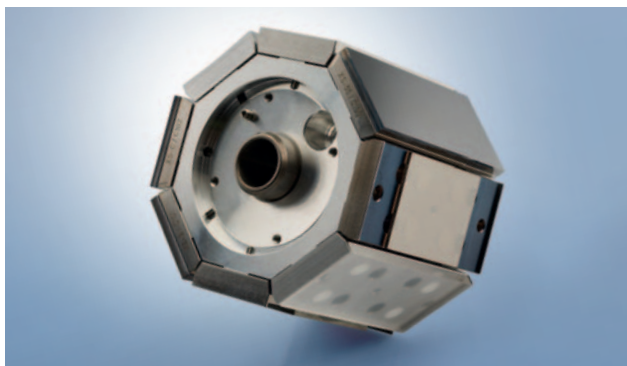
4-position collimator changer for better resolution and higher sensitivity



5-position mask changer for different sample sizes



10-position filter wheel for better peak-to-background ratio



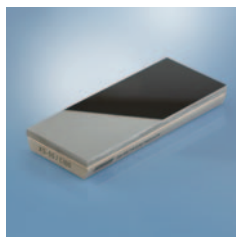
8-position crystal changer for better resolution and higher sensitivity

Analyzer Crystals

Highlights

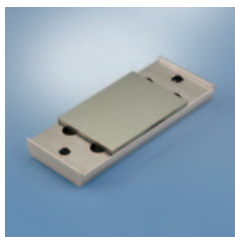
XS-55 Multilayer

Bruker-designed multilayer for the element range C to Mg.



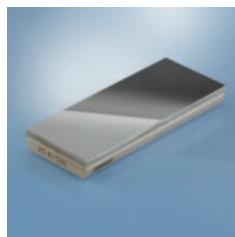
XS-CEM

Bruker's proprietary multilayer optics for absolute long-term precise analysis of Al, Si, P, S and Cl, especially in cement and minerals.



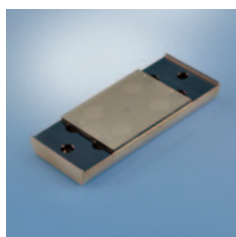
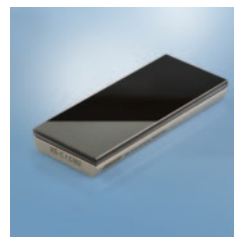
XS-B Multilayer

Patented optics for B and Be, offering a 100% intensity increase for boron in glass.



XS-C Multilayer

Patented optics for C, providing a 40% intensity increase for carbon in steel.



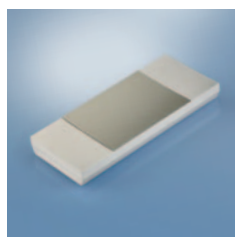
XS-400

Focusing crystal with a special formulation, offering more than 35% intensity for elements from K up to Am.



LiF 220

High-resolution crystal for elements from V to Am, good for geology, minerals and metals.



XS-Ge-C

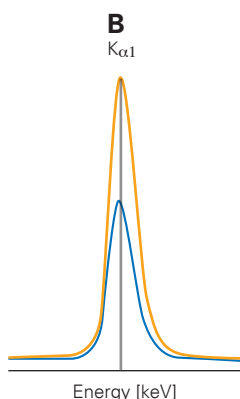
Focusing optics with a 40% increase for P and 20% for S, ideal for traces in petrochemicals.



XS-PET-C

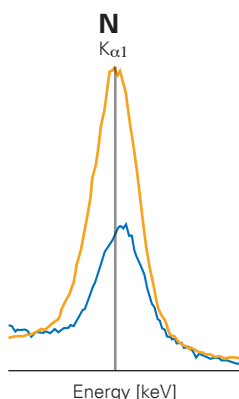
Focusing crystal for Al and Si, providing a 20% intensity increase.

■ XS-B
■ Mo-B4C



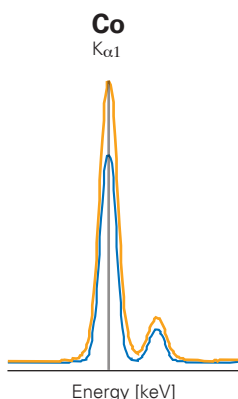
Bruker's proprietary multilayer **XS-B** doubles the intensity for boron compared to conventional optics improving the LLD by more than 30%.

■ XS-N-HS
■ conventional optics



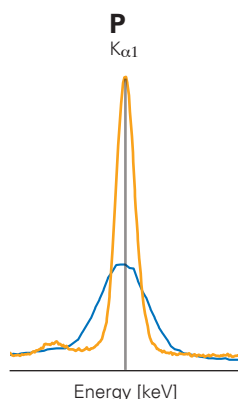
The new multilayer for nitrogen **XS-N-HS** doubles the sensitivity enhancing the analysis of nitrogen, e.g., in fertilizer.

■ XS-400
■ LiF 200



The new focusing crystal **XS-400** increases the sensitivity of elements from K to Am by more than 35% compared to the traditional LiF 200.

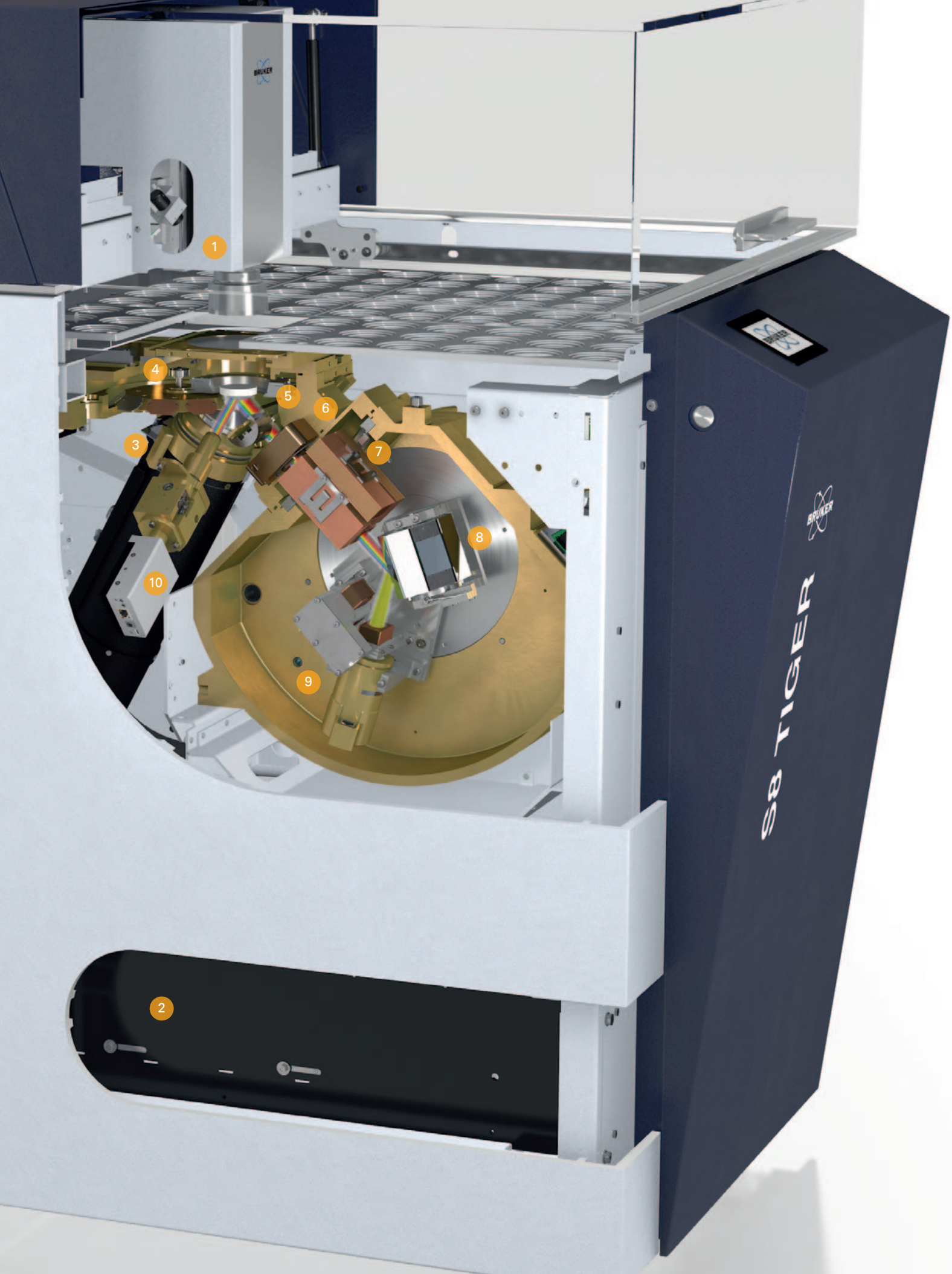
■ XS-GE-C
■ PET



The curved analyzer crystal **XS-GE-C** triples the sensitivity of phosphorus compared to the PET enhancing the analysis of phosphorus, e.g., in oils.

Comparison

Examples



Precision and accuracy by design

Achieve unmatched analytical precision and accuracy with the S8 TIGER Series 3. Using WDXRF spectrometry, its meticulously optimized components deliver maximum intensity for every element, ensuring excellent data quality with every sample.

Decades of continuous development and innovation have honed each component to perfection, all with one single purpose: to deliver the best analytical data.

1

EasyLoad with camera AI

84 positions with magnetic grabber for cups only or combined grabber for cups and bare samples. Camera AI for recognition of sample type, mask size, QR codes, and bar codes.

2

High-voltage generator

Bruker's solid-state generator provides stable high voltage from 20 to 60 kV for both power versions (3 and 4 kW) with up to 170 mA current for the optimal excitation of light elements. Separate regulation of filament and heating current ensures incredibly stable output.

3

High-intensity X-ray tube

Designed for longevity, the X-ray tube features optimized cooling and close coupling, with beryllium windows of 75 μm or 50 μm for optimal intensity and minimal drift over its lifetime.

4

10-position beam filter changer

Enhance peak-to-background ratio with optimal aluminum and brass filters of varying thickness. The closed position protects the tube, and a beryllium shield can be added for extra protection during measurements, this is part of SampleCare™.

5

5-position mask changer and manual mask holder

Handle various sample sizes with spot sizes ranging from 34 mm to 5 mm in diameter. A closed position protects the goniometer from particles and droplets during loading and evacuation, this is part of SampleCare.

6

High-transmission vacuum seal

The goniometer remains under vacuum, protected by a metal shield during loading. For gas purge systems, a high transmission shield maintains separation of chambers, saving helium and locking out fumes, which is especially helpful when analyzing volatile liquid samples.

7

4-position collimator changer

Basically equipped with two collimators – 0.23° and 0.46° – the intensity can be boosted with coarser collimators up to 2° or the resolution can be enhanced with collimators down to 0.17°.

8

8-position crystal changer

The standard configuration covers almost the entire element range with three analyzer crystals. Up to five additional analyzer crystals or multilayer optics can be added for better resolution, more intensity, or improved peak-to-background ratio.

9

Flow counter and scintillation counter

With two detectors, the flow counter for light elements and the scintillation counter for medium and heavy elements, the S8 TIGER provides excellent detection across the entire element range. Both are equipped with multichannel analyzer electronics for enhanced dead time correction.

10

Optional-Multi Element Channel or Single-Element Channel

For higher analyzing speed with simultaneous analysis of single elements or element groups.



Operation
made simple,
flexibility made
easy

Experience unparalleled efficiency with the **S8TIGER Series 3**. Its intuitive **TouchControl™** operation and safe sample handling with **SampleCare™** design make daily tasks effortless. The innovative **EasyLoad™** magazine accommodates various sample types in a single design, while the integrated **camera AI** in the new grabber detects sample types and sizes, automatically setting measurement parameters. Reading sample IDs from barcodes and QR code labels is seamlessly integrated. Efficiency has never been easier!



Online specimens
11301

Choose your application

All applications

CEMENT-QUANT

EDX Calibration

SEM-QUANT BASEL

Smart-quant 40

APM C 2022

OK

Back

Control panel

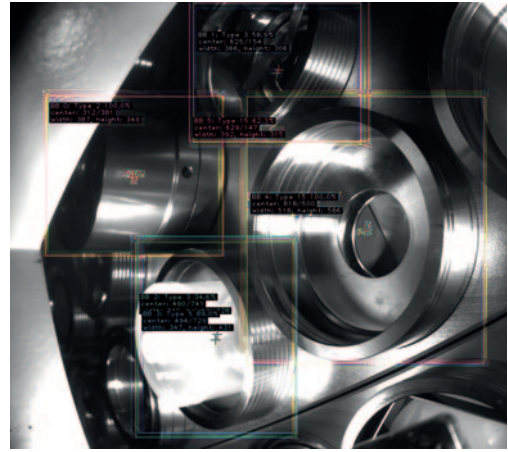
Information

Schedule

Z	Formula	Evaluation Mode	Line Name	Concentration	Reference (%)	LOD (ppm)	Line Count	Line Count
11	Na2O	100	Na KALIZED-QUANT Base	0.00	41.000000%	40.0000	1.00000000	6.00000000
12	MgO	100	Mg KALIZED-QUANT Base	0.00	41.000000%	40.0000	1.00000000	6.00000000
13	Al2O3	100	Al KALIZED-QUANT Base	0.00	41.000000%	40.0000	1.00000000	6.00000000
14	SiO2	100	Si KALIZED-QUANT Base	0.00	41.000000%	40.0000	1.00000000	6.00000000
15	P2O5	100	P KALIZED-QUANT Base	0.00	41.000000%	40.0000	1.00000000	6.00000000
16	SrO	100	Sr KALIZED-QUANT Base	0.00	41.000000%	40.0000	1.00000000	6.00000000
19	CaO	100	Ca KALIZED-QUANT Base	0.00	41.000000%	40.0000	1.00000000	6.00000000
20	CoO	100	Co KALIZED-QUANT Base	0.00	41.000000%	40.0000	1.00000000	6.00000000
22	TiO2	100	Ti KALIZED-QUANT Base	0.00	41.000000%	40.0000	1.00000000	6.00000000
24	Cr2O3	100	Cr KALIZED-QUANT Base	0.00	41.000000%	40.0000	1.00000000	6.00000000
25	Mn2O3	100	Mn KALIZED-QUANT Base	0.00	41.000000%	40.0000	1.00000000	6.00000000
26	Fe2O3	100	Fe KALIZED-QUANT Base	0.00	41.000000%	40.0000	1.00000000	6.00000000
28	SrO	100	Sr KALIZED-QUANT Base	0.00	41.000000%	40.0000	1.00000000	6.00000000
30	ZnO	100	Zn KALIZED-QUANT Base	0.00	41.000000%	40.0000	1.00000000	6.00000000



The combined grabber handles both, bare samples (pressed pellets, fused beads, metal samples with smooth surface) with the vacuum grabber and cups with the magnetic grabber without tool change.



The camera AI automatically identifies the characteristics of the loaded samples, including the type, cups or not, mask size, and ID labels (barcodes, QR codes). It also recognizes if samples are loaded on priority positions and checks for empty positions when unloading.

Efficient operation with EasyLoad and with camera AI

The new EasyLoad sample magazine is designed for smart and efficient operation. Its integrated camera AI recognizes samples, selects the appropriate mask, determines the best mode (vacuum or helium), reads the sample IDs from barcodes and QR codes, and prioritizes samples. For predefined positions, it applies the correct method automatically. This ensures intuitive, easy, and failsafe operation.

The S8TIGER's EasyLoad magazine has 84 positions by default and comes in two configurations: One magnetic grabber for samples in cups and automation rings and the combined grabber which handles bare samples with the integrated vacuum grabber.

Additionally, the S8TIGER supports up to two automation ports for managing samples from automated preparation.

Bruker's smart solutions – efficiency guaranteed.

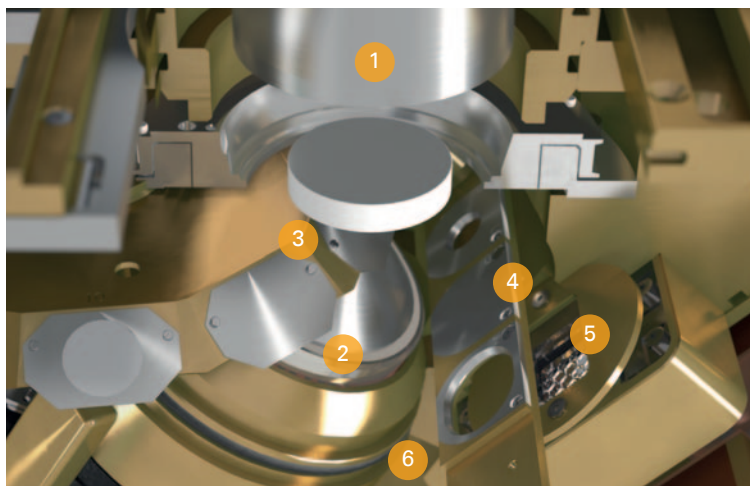
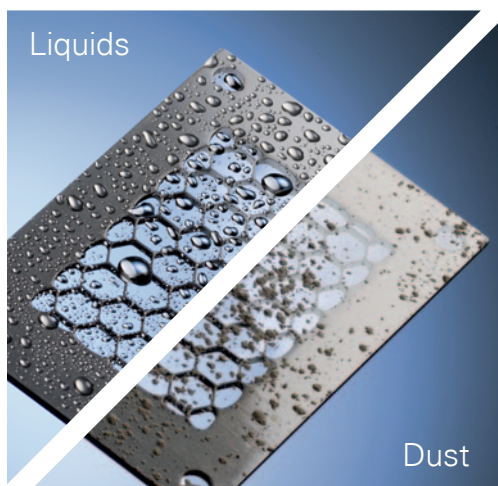
SampleCare – maximum uptime meets failsafe operation

Thanks to SampleCare you can rely on the S8 TIGER when it comes to fragile or liquid samples. Like no other system SampleCare continuously protects all important system components from contamination.

During loading and while measuring liquids, loose powders or pressed pellets with conventional spectrometers, something might spill or release particles. This might lead to incorrect results or in the worst case, to system shutdown.

Our S8 TIGER with SampleCare safely prevents this and system components are well protected. The chamber is easy to access and can be cleaned with little effort.

The high-transmission vacuum seal of the S8 TIGER is unique in XRF. It protects the goniometer against particles and droplets. By separating sample chamber and goniometer it reduces the cost of operation by reducing the required helium purge.



- 1 The camera AI detects liquid samples or loose powders and disables the vacuum mode.
- 2 The coating of the 50 μm high-intensity X-ray tube protects the tube window from damage by aggressive samples; the efficient tube head cooling prevents samples from heating up.
- 3 The tube shield in the filter wheel prevents droplets or particles contaminating the X-ray tube; the optional beryllium shield does this during measurements.
- 4 The goniometer shield in the mask changer protects the goniometer chamber and its components against contamination during loading and unloading.
- 5 The high-transmission vacuum seal continues the protection during the measurement, without blocking the element specific radiation. Any gas or fume is locked out of the goniometer, this also eliminates the need of the helium purge of the goniometer.
- 6 Dust reservoir to collect liquids and particles.



The S8 TIGER Series 3 is the powerful analytical tool for quality and process control, but also in material research. Our QUANT solutions are ready-to-analyze available for GEO, CEMENT, or PETRO and provide excellent data tailored for specific industries, compliant to international standards, such as ASTM, DIN, or ISO.

The powerful team of SPECTRA.ELEMENTS™ and SMART-QUANT WD™

SPECTRA.ELEMENTS simplifies complex tasks for the S8 TIGER, making them as easy as 1-2-3. It offers quick access to all functionalities in a single window, including easy calibration with the WIZARD, measurement scheduling with the LOADER, and data management with the RESULTS MANAGER. Thanks to SPECTRA.ELEMENTS minimal training is required.

SMART-QUANT WD enables fast, calibration-free chemical composition analysis with powerful matrix correction. It supports quick sample screening with fast scan mode and precise evaluations with interactive mode.

SPECTRA.ELEMENTS provides unique analytical flexibility by incorporating standardless calibration parameters of SMART-QUANT WD into user-specific calibrations for elements where no reference values are available.

This dream team makes your life easier!

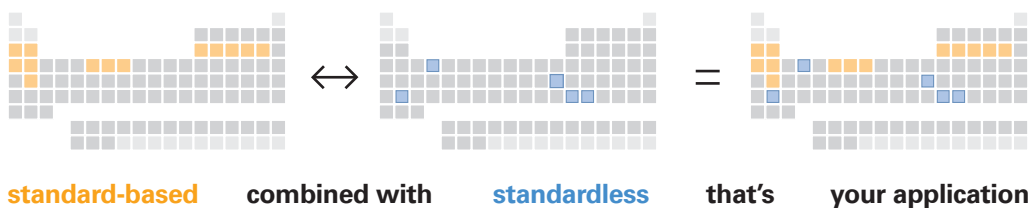
Application Example

- Full standardless SMART-QUANT WD calibration, from B to U
- User-specific standard-based calibrations
- Selected standardless SMART-QUANT WD calibrations
- Not available

H																	He
Li	Be									B	C	N	O	F	Ne		
Na	Mg									Al	Si	P	S	Cl	Ar		
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac															
			Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	
			Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lw	

SPECTRA.ELEMENTS
enables you to easily setup
your own calibrations,
SMART-QUANT WD is our
standardless package for
quick analysis of all different
samples and covers all
elements from B to U
without prior calibration.
Additionally you can easily
add elements to your
calibrations.

Advantage of the seamless integration of SMART-QUANT WD in SPECTRA.ELEMENTS: Elements can be added by copying calibration details into user specific calibrations for elements where no standards are available.



Ergonomic sample loading
and quick start of measure-
ments using TouchControl.



Operating the S8 TIGER is super easy with TouchControl

Just place your sample in the magazine and tap on the touchscreen, that's it.

The automatic predefined measuring program starts immediately and delivers your results right on time. Behind the scenes, the program assigns the sample ID, transmits the measured data to the control center or LIMS system, and displays the results instantly.

As a lab manager, you have the flexibility to define priority samples and adjust at any time. The S8 TIGER can also operate in self-sufficient island mode with full access to the system, while the data is available via the network.

TouchControl ensures easy operation and functionality for every user, with multiple languages.

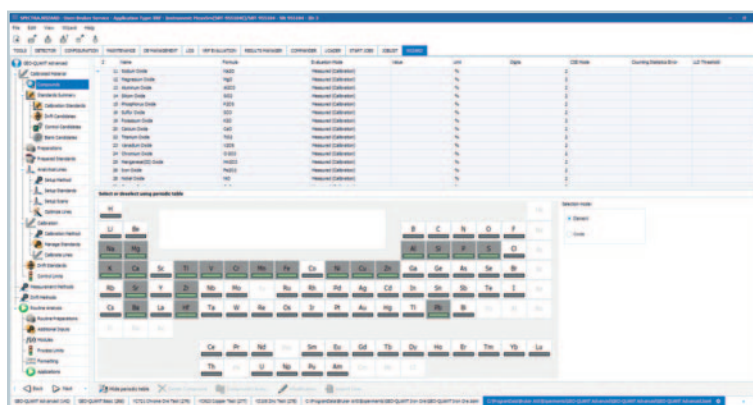


Create your application

SPECTRA.ELEMENTS makes setting up an application, running an evaluation and a data report easy, straightforward and intuitive.

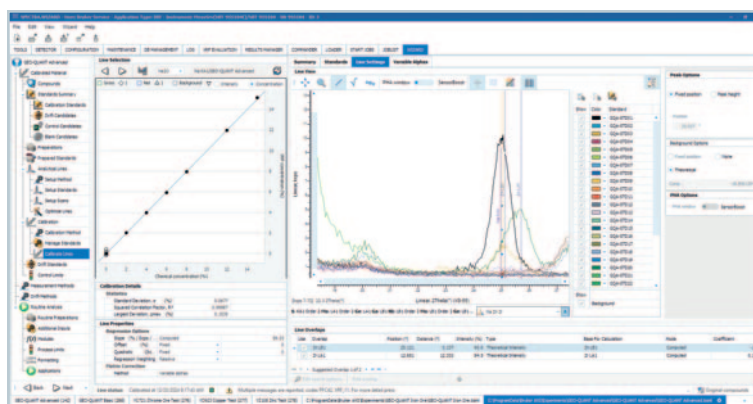
Choose your elements

Setting up your own calibration or enhancing Bruker solution packages with integrated analytical intelligence is easy: just select the elements and compounds you need to analyze and the optimal measurement method is automatically created.



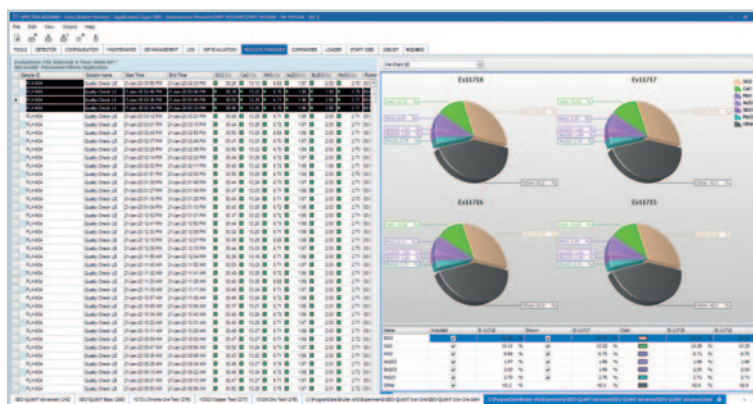
Create your calibration

The setup scans allow for quick check of the element and background positions. Using the patented theoretical background is always an option to save valuable measurement time. Once all standards are analyzed, the matrix correction and all calibration details are calculated. Refine as needed and interactively see how your changes work.



Get your data

All data are stored in the central database. You may search for single samples, print or copy results tables or element distribution diagrams. When you evaluate quality check samples, you can easily display changes over time for quality reports.





The **S8TIGER** is your reliable partner, operating 24/7. **SafeGuard™** in the **S8TIGER** continuously monitors system health and predicts maintenance needs. With Bruker's optional **LabScape™ Cloud**, you can manage the S8TIGER fleet in your company and our service team can monitor the performance of your system in real-time to provide timely support.

The powerful **LabScape Cloud** ensures maximum system uptime and instant support even in remote locations, every system parameter is displayed in the **S8 TOOLS™** plugin within **SPECTRA.ELEMENTS**.



S8 TIGER –
unstoppable
performance



The global Bruker service team utilizes AR tools like VR goggles, cell phones, or tablets. So, when you are calling for support, our engineers can see your instrument and display markers and documents live while you are performing maintenance or easy diagnosis steps.

Boost uptime and add cost-efficiency

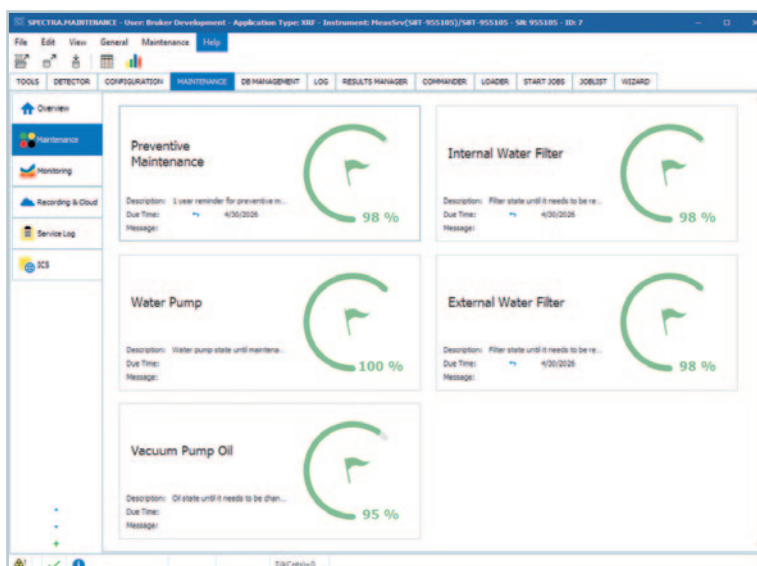
The S8 TIGER Series 3 is not just about top analytical performance – it is a game-changer for reliable process and quality control. SafeGuard continuously monitors the S8 TIGER's vital components and critical system parameters, predicts maintenance needs and informs operators of the system's health. With S8 TOOLS you get a complete view of the system status and access to reset and repair functions for effective troubleshooting.

With the optional LabScape Cloud you can collect the system information for your global fleet management. Lab managers and Bruker's global support team can access the status anytime, enabling immediate diagnosis and troubleshooting. The secure one-way communication ensures IT safety.

LabScape service contracts offer cost-efficient support from basic maintenance to full coverage, including all parts.



LabScape Cloud enables real-time fleet management and constant monitoring of your system status for authorized personnel. The immediately available information speeds up troubleshooting and increases system uptime.



SafeGuard checks important instrument parameters, monitors changes of vital components. In the maintenance view you get a clear overview of the time interval until the next PM visit.



System maintenance of the S8 TIGER is easy and quick. Power, water and gas connections are visible on the back, Cooling water level can be easily checked and refilled, and the ion exchange resin cartridge is accessible and simple to change when required.

S8 TIGER™ Series 3

Experience superior precision and efficiency with the S8 TIGER Series 3 high-power wavelength dispersive X-ray fluorescence spectrometer. With an extensive choice of detectors and optical components you can perfectly tailor your S8 TIGER to your application. Get the right solution for fast, accurate, and reliable process and quality control and material research.

**S8 TIGER – built on experience,
powered by innovation!**

Key Features

- HighSense™ detectors achieve excellent precision and speed.
- SensorBoost™ accelerates your signal processing.
- XS crystals and multilayers improve intensity and resolution.
- SPECTRA.ELEMENTS™ for optimal application setup and superb accuracy.
- SMART-QUANT WD™ for fast results of any sample.
- Application specific QUANT™ solutions for quick system setup and exquisite data quality.
- EasyLoad™ sample magazine simplifies sample handling with camera AI and TouchControl™.
- LabScape™ Cloud and AR tools ensure optimal system uptime and quick support.



Technical data
and patents



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