analytikjena
An Endress+Hauser Company

contrAA® 800 series

versus

contrAA® 300/600/700

Comparison of new HR-CS AAS contrAA® and its predecessor

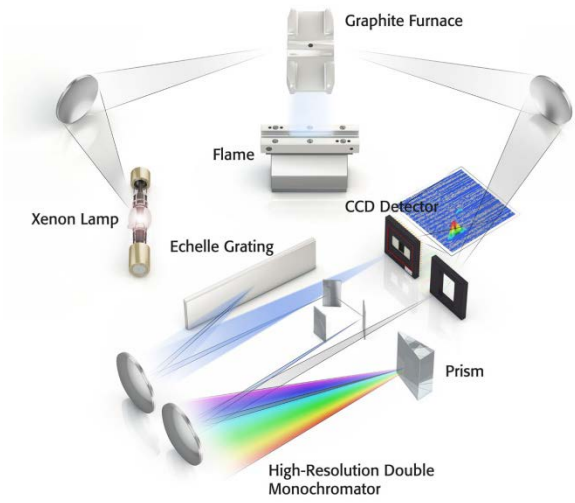
Core HR-CS AAS technologies covered in a new optimized instrument design

Single continuum radiation source – Xenon short arc lamp

- One lamp covering the whole wavelength range (185-900 nm)
- Simultaneous drift correction
- Immediately ready for measurement
- ***New: Lamp bulb is user replaceable, alignment-free***

Benefits

- **No lamp change – flexible and fast switching between elements/lines**
- **Wide choice of alternative wavelengths**
- **Reduced lamp costs**
- **Fast sequential and simultaneous multi element analysis**

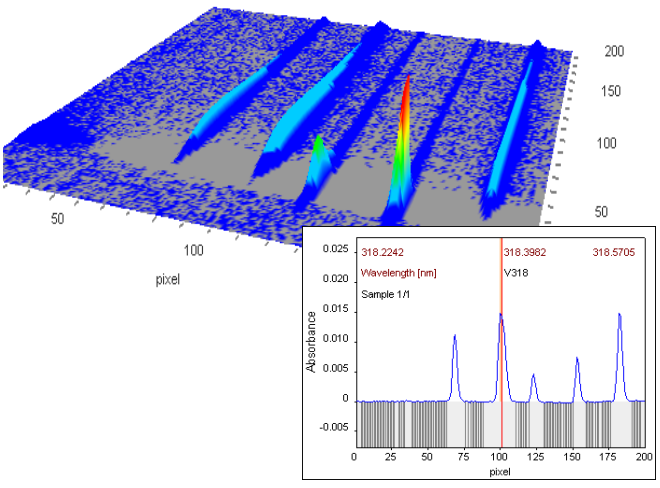


High-resolution optics with protective coating, sealed in a special lightproof cover

- Double monochromator with Echelle grating – premonochromator with quarz prism, Highest wavelength accuracy by automatic wavelength correction → Unmatched resolution, 1:145000
- Two-dimensional FFT backside illuminated CCD array detector with high quantum efficiency and increased UV-sensitivity → Excellent Signal-Noise-Ratio for market-leading detection limits
- ***New: Purge with air or Argon***

Benefits

- **Almost free of spectral interferences**
- **Reliable analysis results**
- **Low detection limits**
- **Purge: Avoid contamination from lab atmosphere, improve UV-transmission**



Unique 3D display of spectra and simultaneous background correction

- No loss of real measurement time and sensitivity,
- Complete correction of structured background
- Visibility of spectrum and uncovering of spectral interferences → easy correction

Benefits

- **Fast analysis times (in flame mode up to 10 elements comparable to simultaneous ICP-OES)**
- **Reliable analysis results**
- **"You see what you measure" (Trust in results)**
- **Easy individual method development for most advanced analytical demands**
- **Visibility of further absorption lines – information of other elements present in the sample and easy quantification**

Changes in Instrument Design

contrAA® predecessors

Big and heavy

- Tandem instrument with two atomizer compartments – large footprint, heavy (width: 119cm)
- Small but unflexible single atomizer instruments

Single atomizer instrument and tandem instrument with two atomizer compartments

- Flexibility versus lab space
- Inefficient light guidance in tandem instrument, energy/sensitivity losses

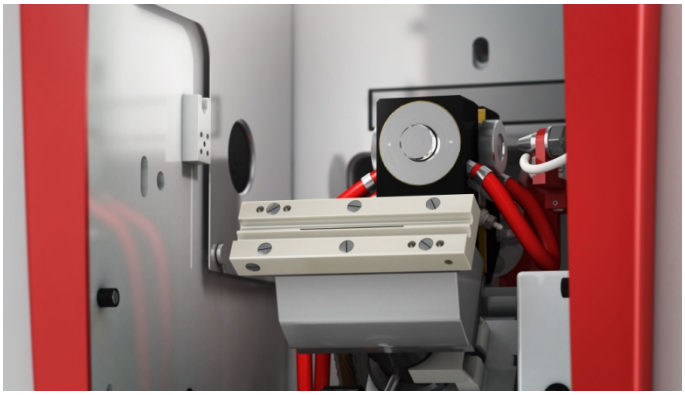
contrAA® 800

Space saving and compact

- One compact housing for flame, graphite furnace or duo device, (Width: 78cm – 41cm smaller!)
- Reduced weight for duo instrument
- New, modern design

Automatic atomizer change

- Easy, fully automatic change of atomizers for duo model
- Software controlled
- Automatic two-dimensional atomizer alignment



Changes in Spectrometer Design

contrAA® predecessors

Lamp

- Firmly fixed in housing
- Complete change necessary → **high costs**

Optics

- Coated and sealed in light proof cover
- No optics purge

contrAA® 800

Lamp

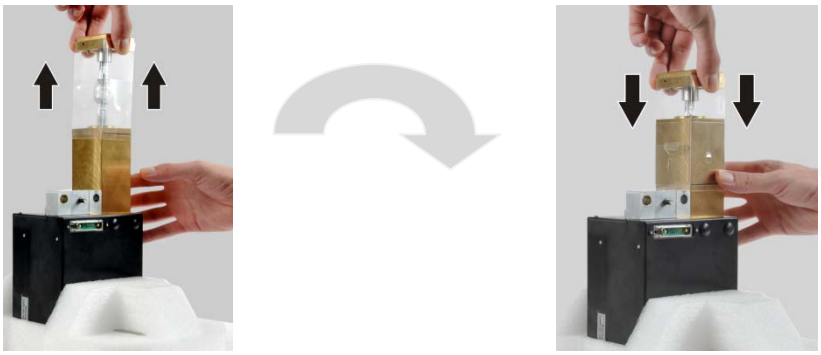
- Lamp can be changed separately, not firmly connected to housing
- Easy replacement of Xe-lamp bulb by operator
- Alignment free, no special tools, safety

  → **Easy replacement, lower lamp costs**

Optics

- Improved sealing of optical system
- Less reflective surfaces – improved light transmission
- Purge of the optical system with air or Argon
- Integrated compressor with dust/moisture filter as standard configuration

  → **Improvement of transmission across entire wavelength range**
  → **Improvement of UV transmission <200nm with Argon purge**
  → **Protection of optical components from lab atmosphere with air purge**



Software Changes

contrAA® predecessors

Graphite Furnace drying program

- Visual observation with furnace camera, manual setting of drying parameters by the operator
  → Drying programs often longer than necessary – reduced sample throughput

Height optimization of flame atomizer only

- No optimization of furnace position possible (service only)
- No optimization of flame lateral position possible (service only)

Extended working range

- Wide choice of secondary wavelengths available
- Manual setting of peak evaluation

contrAA® 800

Automatic optimization of drying program

- Software-optimized drying parameters
- Advanced image-recognition software detects:
  - ✓ Tube type (Platform or standard tube)
  - ✓ Injection capillary height
  - ✓ Bubbles / boiling / sputtering
  - ✓ Completion of drying process

→ Efficient drying, optimization of analysis time, reliable results

2D-Optimization of atomizer positions

- Position detector – If atomizer is moved by hand, it will automatically return to its original position
- Optimization routine for atomizer height and lateral position for flame and furnace
- Lateral position available as an additional method optimization parameter

→ Improved performance, element-specific optimization possible

Dynamic Mode, extended working range

- Wide choice of secondary wavelengths available
- Automatic or manual setting of peak evaluation depending on concentration range
- Wide-range calibration using multiple evaluation settings simultaneously

→ Dynamic working range covering up to 5 orders of magnitude – similar to ICP OES