



## TOTAL REFLECTION X-RAY FLUORESCENCE

# Clean Water Package

Accurate water analysis with the S2 PICOFOX

The Clean Water Package (CWP) is an attractive offer for on-site analysis campaigns of fresh water, wastewater and effluents. It is supplied with the wastewater reference standard SPS-WW2 already prepared on quartz discs.

The S2 PICOFOX is a compact, portable benchtop TXRF (Total Reflection X-ray Fluorescence) spectrometer for simultaneous detection of ultra-trace element in various samples. The spectrometer provides cost-effective on-site screening of a wide range of samples and a subsequent selection of samples for laboratory analyses.

The instrument requires no media and can be easily transported to remote sites to screen any environmental sample for trace elements. This helps to reduce the number of samples to be measured in the laboratory and thus minimizes the amount of hazardous chemicals and CO<sub>2</sub> released during power generation.

### CWP specifications

- S2 PICOFOX spectrometer equipped with
  - line focus X-ray tube with Mo target
  - XFlash® silicon drift detector with 60 mm<sup>2</sup> active area
  - automatic sample changer with a capacity of 25 sample disks
- Notebook PC
- TXRF accessories
- Wastewater standard SPS-WW2 prepared on three quartz discs
- Wastewater standard operation procedure (SOP) including calibration

Typical power consumption for the spectrometer and PC is about 220 W. For on-site campaigns without power supply the use of a portable power station with a minimal capacity of 750 Wh and at least two power sockets is recommended.



## Preparation of water and aqueous standard samples on quartz discs

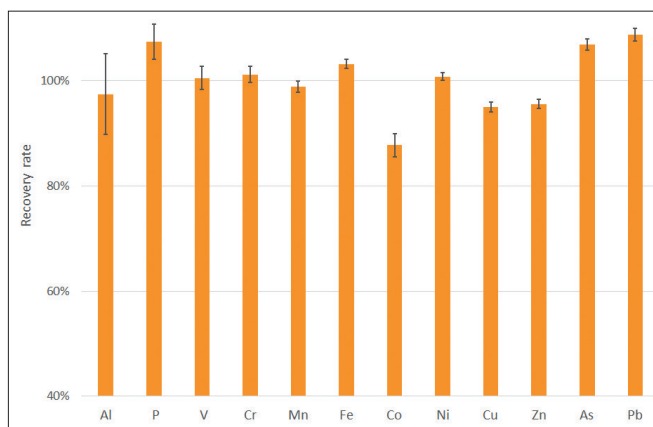
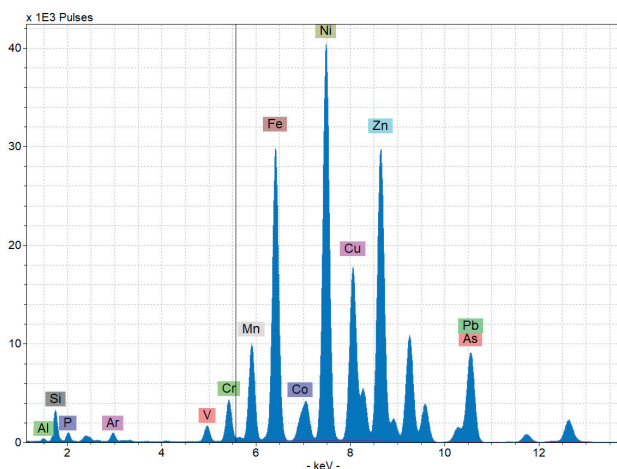
- Transfer of 1 ml sample into reaction vials
- Addition of 5 µl Gallium solution (0.1 g/l) for internal standardization
- Addition of 100 µl polyvinyl alcohol solution (0.3 g/l) for homogeneous sample drying
- Transfer of 10 µl solution onto siliconized quartz glass sample carrier
- Drying on hot plate

A full instrument load of 8 samples prepared in triplicate can be prepared in less than 30 min.

The S2 PICOFOX can accurately analyze almost all certified elements offering detection limits typically in the low ppb range.

**Nominal element concentrations of the wastewater reference standard SPS-WW2 and typical detection limits of the S2 PICOFOX**

| Element    | Nominal conc. (µg/l) | LOD (µg/l) |
|------------|----------------------|------------|
| Aluminum   | 1000                 | 1211       |
| Phosphorus | 5000                 | 197        |
| Vanadium   | 500                  | 9.2        |
| Chromium   | 1000                 | 10.3       |
| Manganese  | 2000                 | 9.8        |
| Iron       | 5000                 | 7.8        |
| Cobalt     | 300                  | 5.2        |
| Nickel     | 5000                 | 6.2        |
| Copper     | 2000                 | 4.7        |
| Zinc       | 3000                 | 7.9        |
| Arsenic    | 500                  | 1.2        |
| Lead       | 500                  | 1.4        |



TXRF spectrum (left) and recovery values (right) of the reference standard SPS-WW2 measured with the S2 PICOFOX.

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