

# Apex-FAST

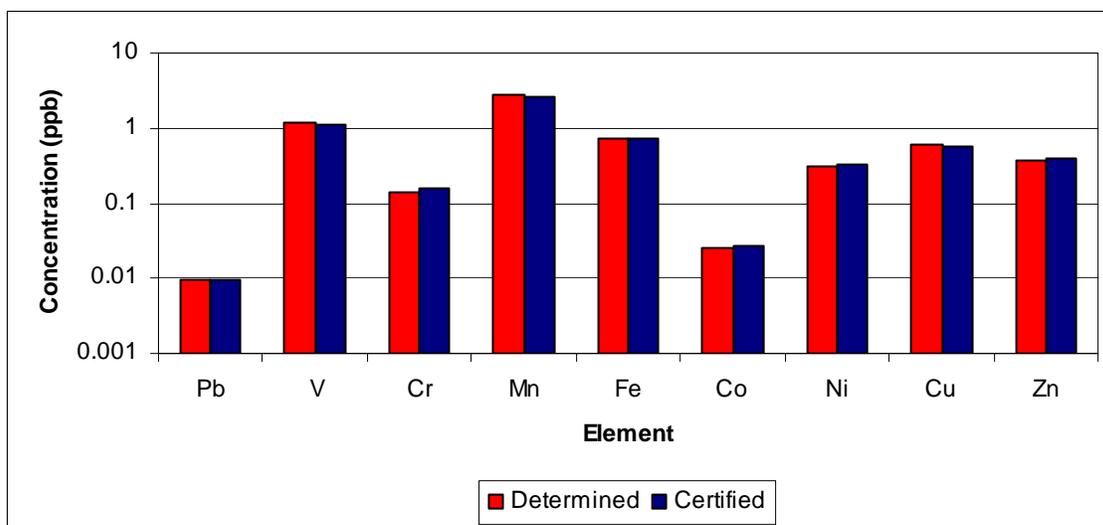
Elemental Scientific introduces the apex-FAST a compact, high performance sample introduction system for ICPMS and ICPAES. The apex FAST sample instruction system allows:

- Direct introduction of high TDS samples at low single-digit microliter-per-minute flow rates for the direct analysis of samples such as undiluted seawaters and high-purity semiconductor-grade materials.
- Increased sensitivity up to 10x vs. standard sample introduction techniques
- Minimized drift otherwise caused by sample deposition on ICPMS cones or ICP injectors
- Precise introduction of micro samples using an optional oring-free quartz or PFA syringe pump
- Automatic matrix removal and pre-concentration for applications such as
  - Rare earth elements in seawater
  - Uranium and trans-uranium elements
  - Species-specific preconcentration (e.g. Se IV)



Apex-FAST: combination of Apex inlet system with FAST injection valve

## Direct aspiration of undiluted seawater



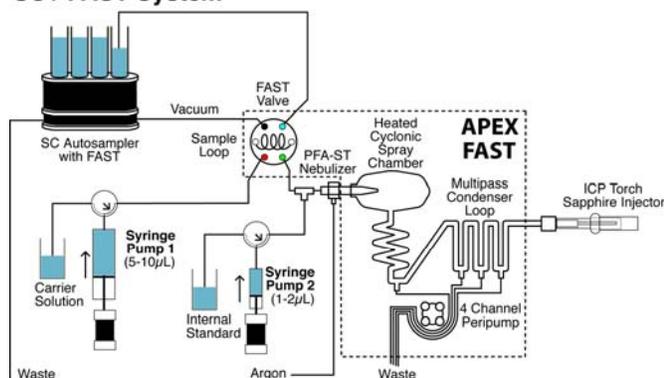
Determined and certified values for CASS-4 using the Apex-FAST and ELEMENT2



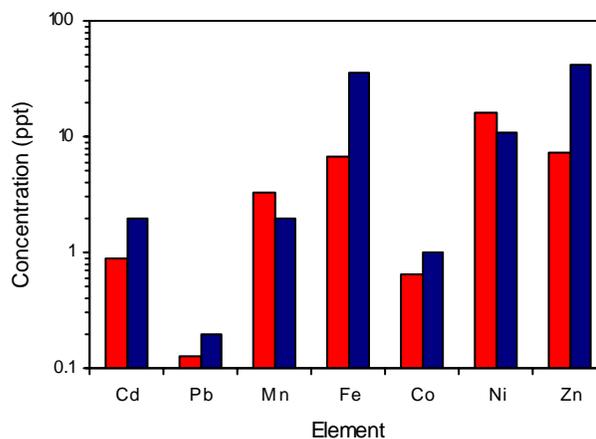
## Direct Analysis of Seawater

- Minimized sample handling and reagent related blanks
- Controlled low flow via syringe pumps
- Improved limits of detection and accuracy

### SC / FAST System



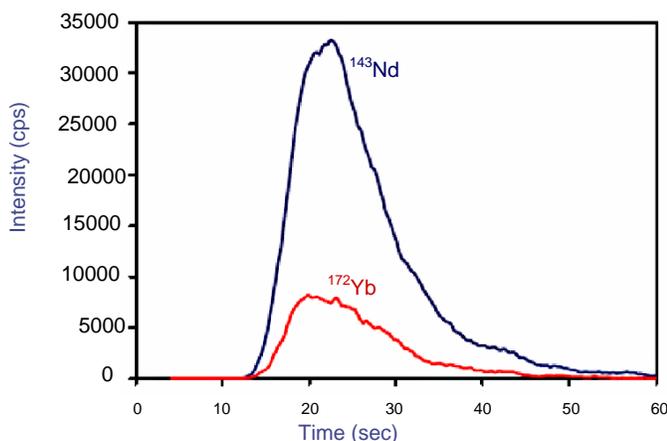
Schematic of Apex-FAST set-up for direct analysis of seawater



Data showing improvement in limits of detection (Red bars) of the Apex-FAST for the direct analysis of seawater

## SC-FAST for Preconcentration/Matrix Removal

- Replace loop with pre-concentration column
- Over 80 fold improvement in signal ( 4 fold from Apex; 20 fold from column)
- Simple method creation and control



REE elution profile, pre-concentrated from seawater



Apex-FAST with injection loop replaced with preconcentration micro-column