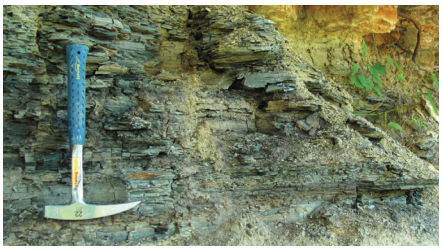


apex Ω

Membrane Desolvation System

Elemental Scientific

ICP | ICPMS | AA

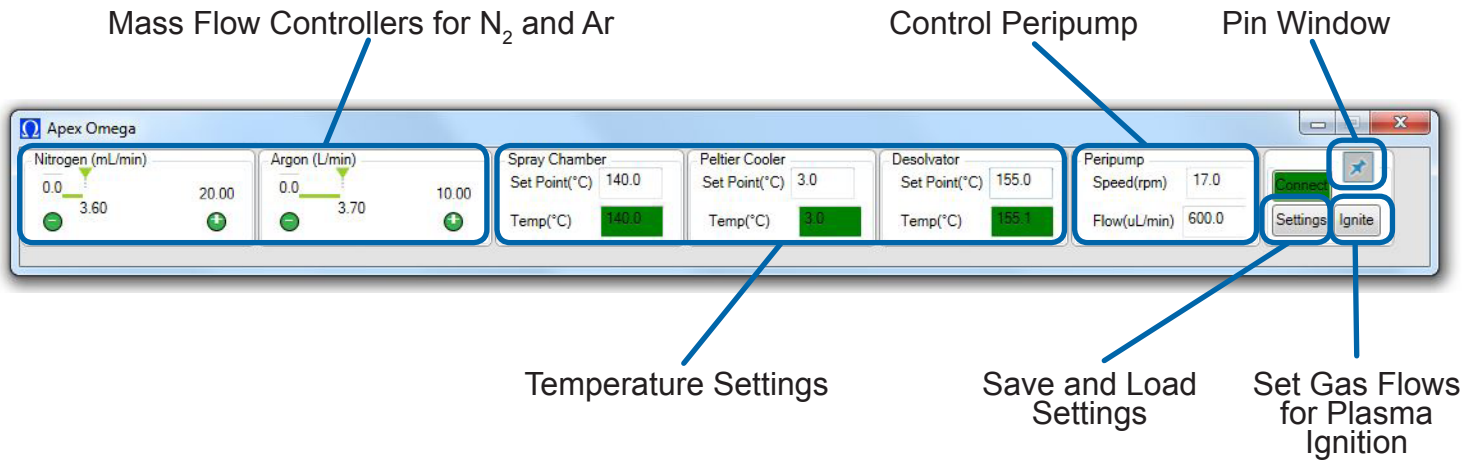
apex Ω Q

The apex Ω desolvating nebulizer is the highest performing ICPMS sample introduction system available. An innovative multistage Peltier-cooled desolvation system combined in series with a helical EPTFE fluoropolymer membrane desolvator simultaneously maximizes ICPMS sensitivity and reduces oxides.

Features

- Qtz or PFA Versions Available
- Integrated Software Control
  - Temperature
    - Spray chamber
    - Desolvator
    - Condenser
  - Gas Flows
    - Ar Sweep
    - N_2 Addition
- Maximize Signal Intensity
- Minimize Oxides and Interferences
- Excellent Washout
- Combine with micro*FAST* MC for syringe loading injection

Software Control



High Sensitivity Stability and Low Oxides

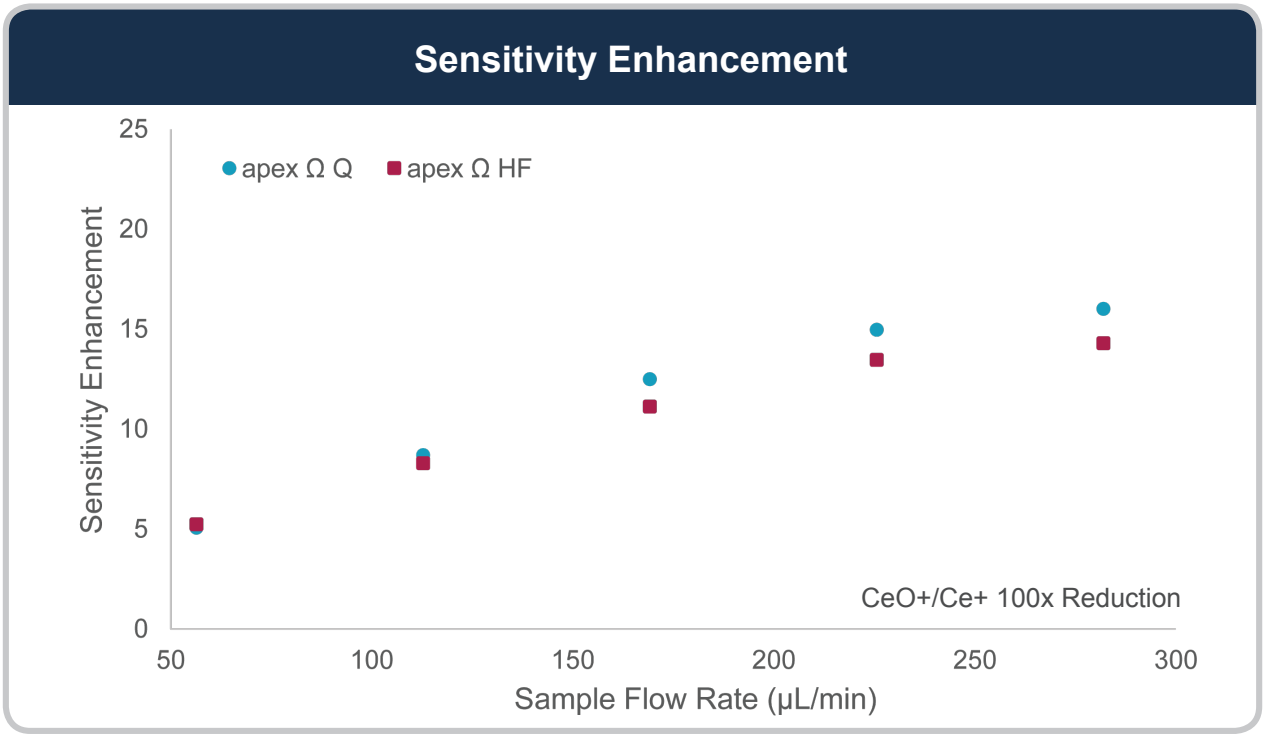


Figure 1: Similar sensitivity enhancement for both apex **Ω** Q and HF.

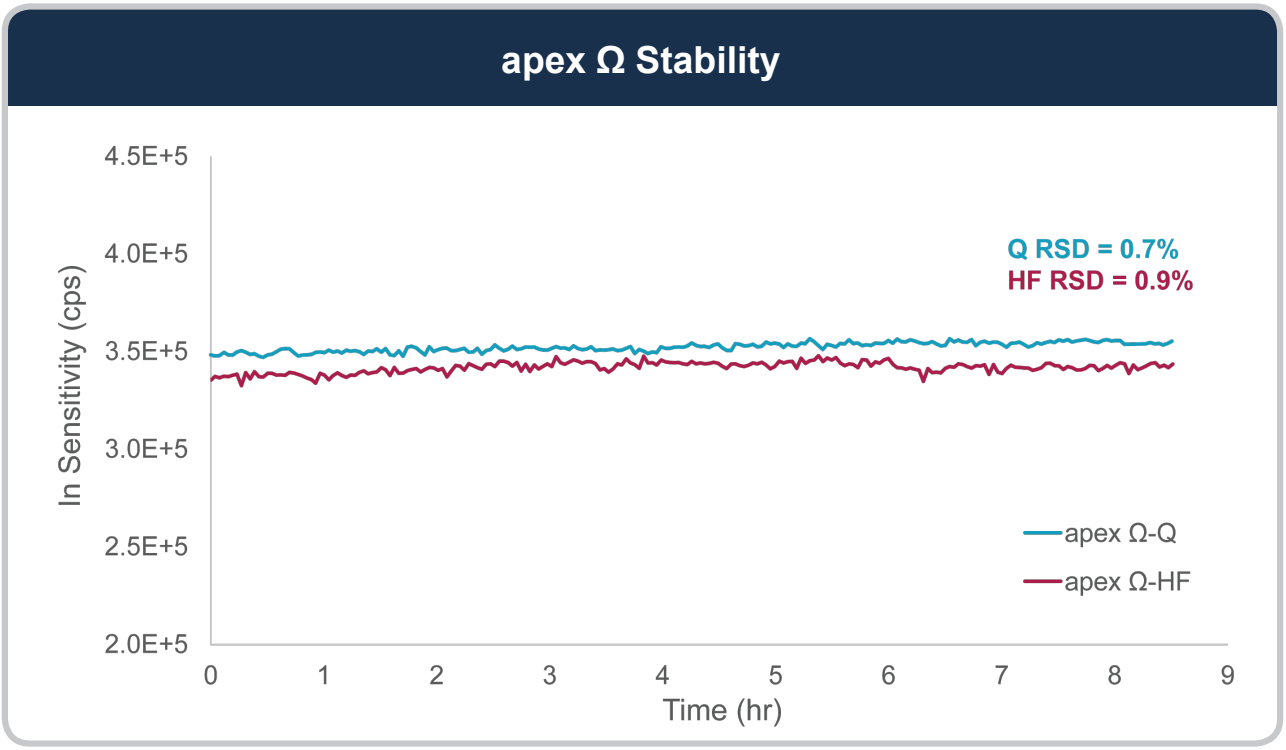


Figure 2: 8 hour stability test illustrates < ± 1% RSD (1 δ) for both apex **Ω** Q and HF.

Precise Isotope Ratios

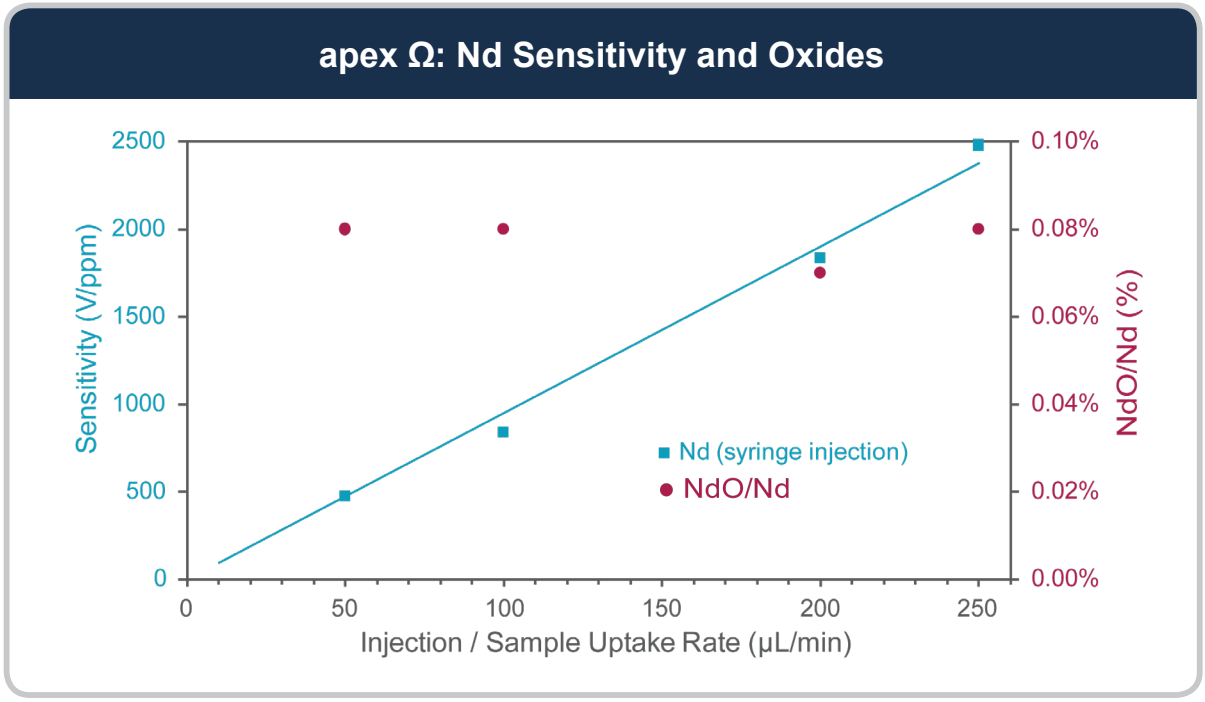


Figure 3: Signal increase is linear with sample injection flow rate while low oxides are maintained independent of sample flow rate.

Neptune *Plus* data courtesy of Nicholas Lloyd, Thermo Fisher Scientific (Bremen) GmbH.

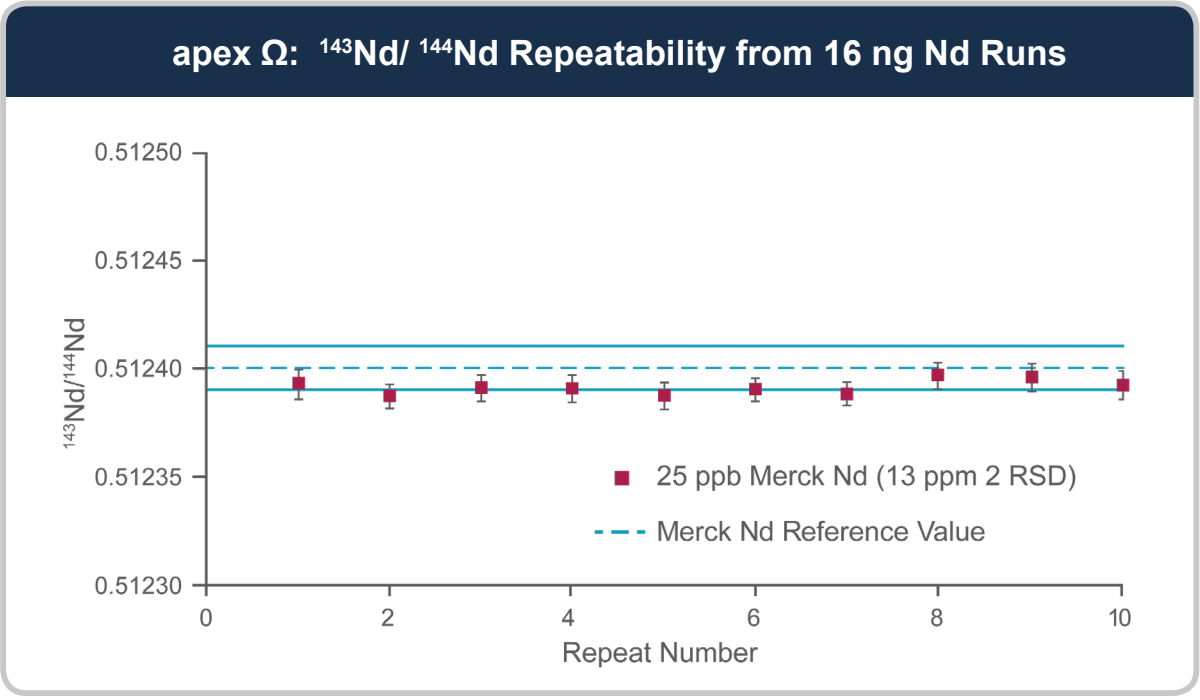
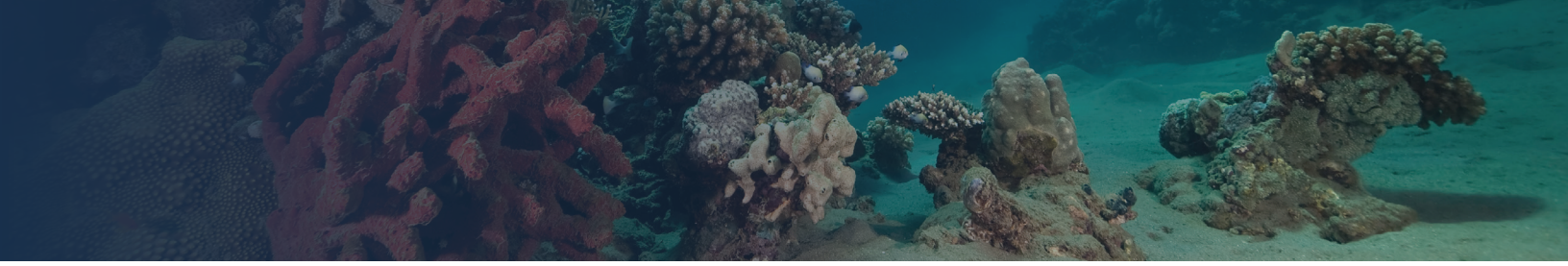


Figure 4: Repeatability of 16 ng Nd runs (25 ng/g solution), using apex **Ω** with PFA-100 self- aspirating nebulizer and 5 minute acquisition time.

Neptune *Plus* data courtesy of Nicholas Lloyd, Thermo Fisher Scientific (Bremen) GmbH.



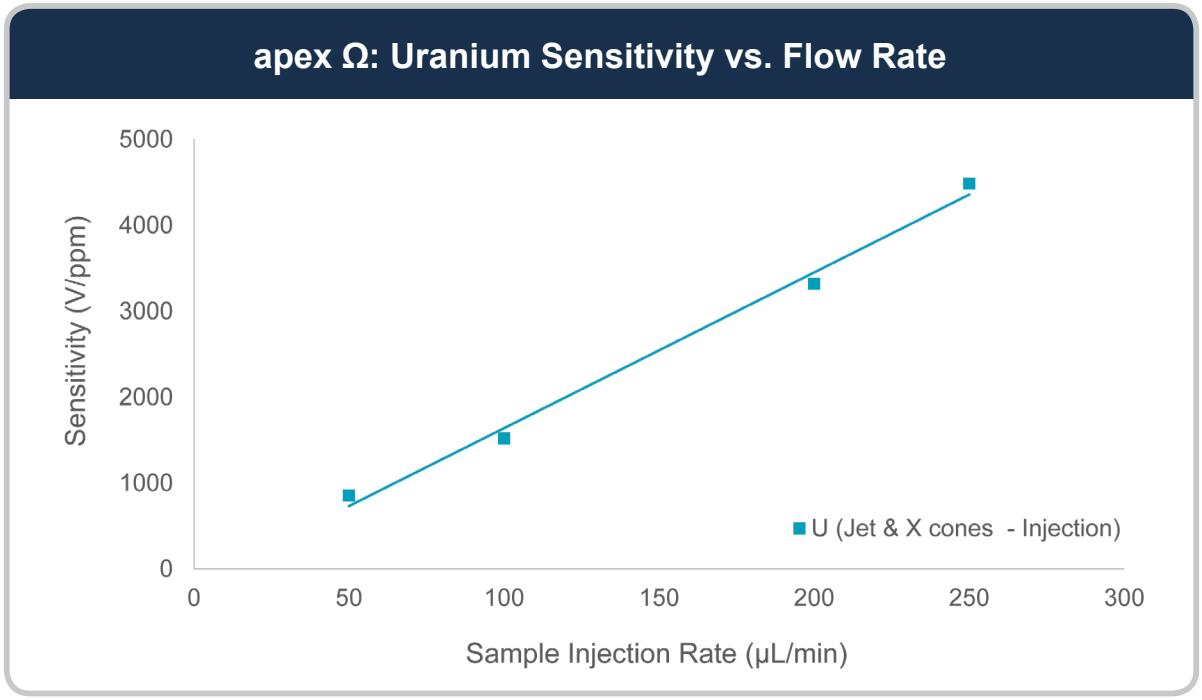


Figure 5: Signal increase is linear with sample injection flow rate up to 5000 v/ppm U.

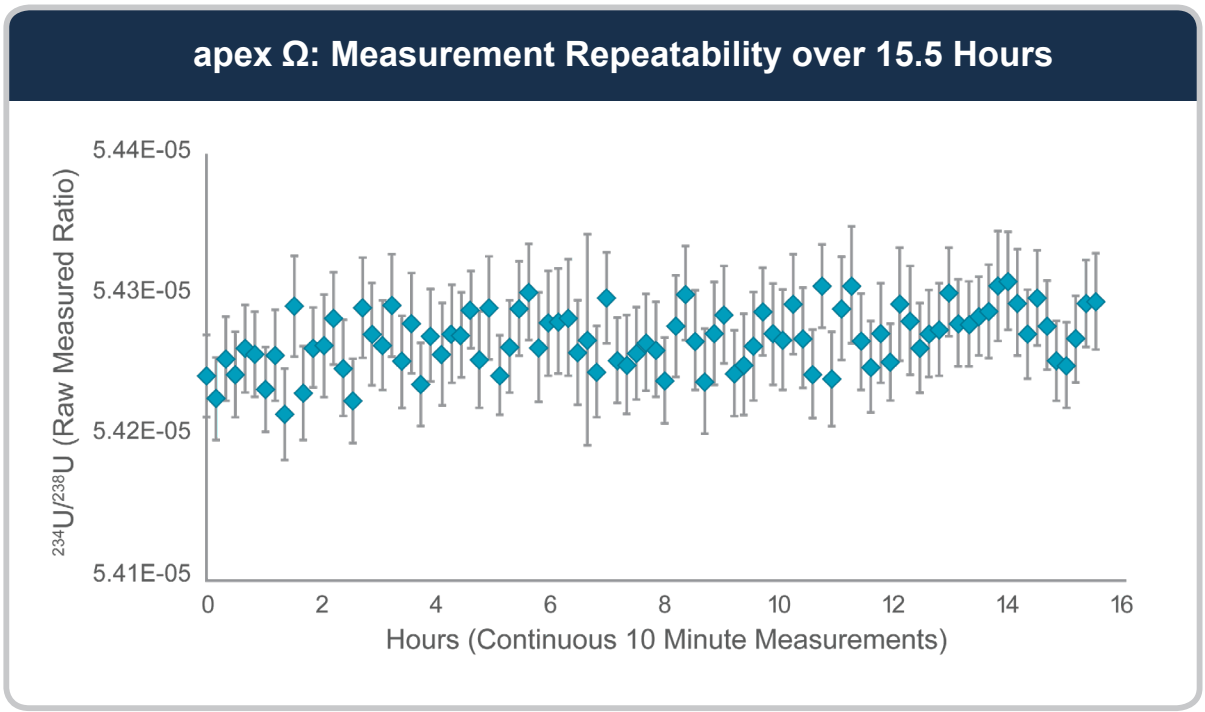
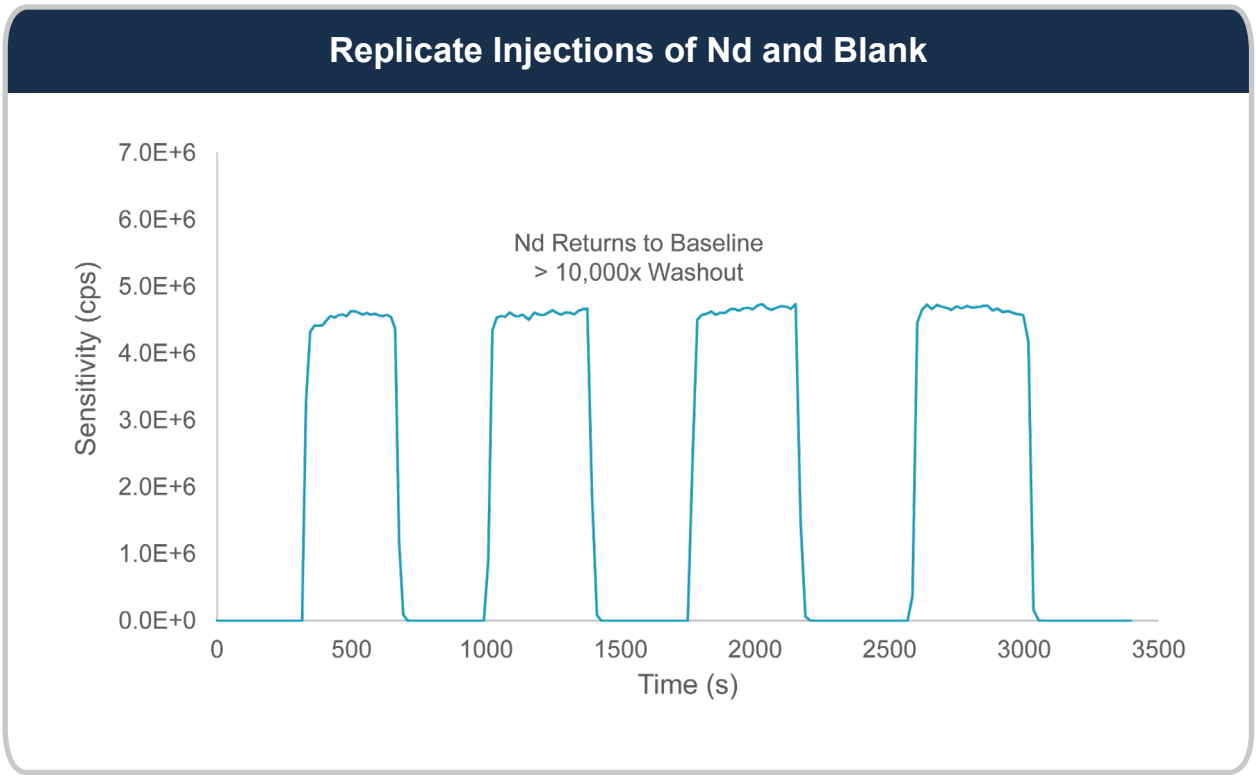


Figure 6: $^{234}U/^{238}U$ measured with 131 kcps (2 mv) ^{234}U on 10^{13} **Ω** amplifier from 25 ng/g NBS U-010. 92 x 10-minute runs spanning 15.5 hours. Raw Ratio RSD: 0.04% (external), 2se (Internal)

Neptune *Plus* data courtesy of Nicholas Lloyd, Thermo Fisher Scientific (Bremen) GmbH.

Washout



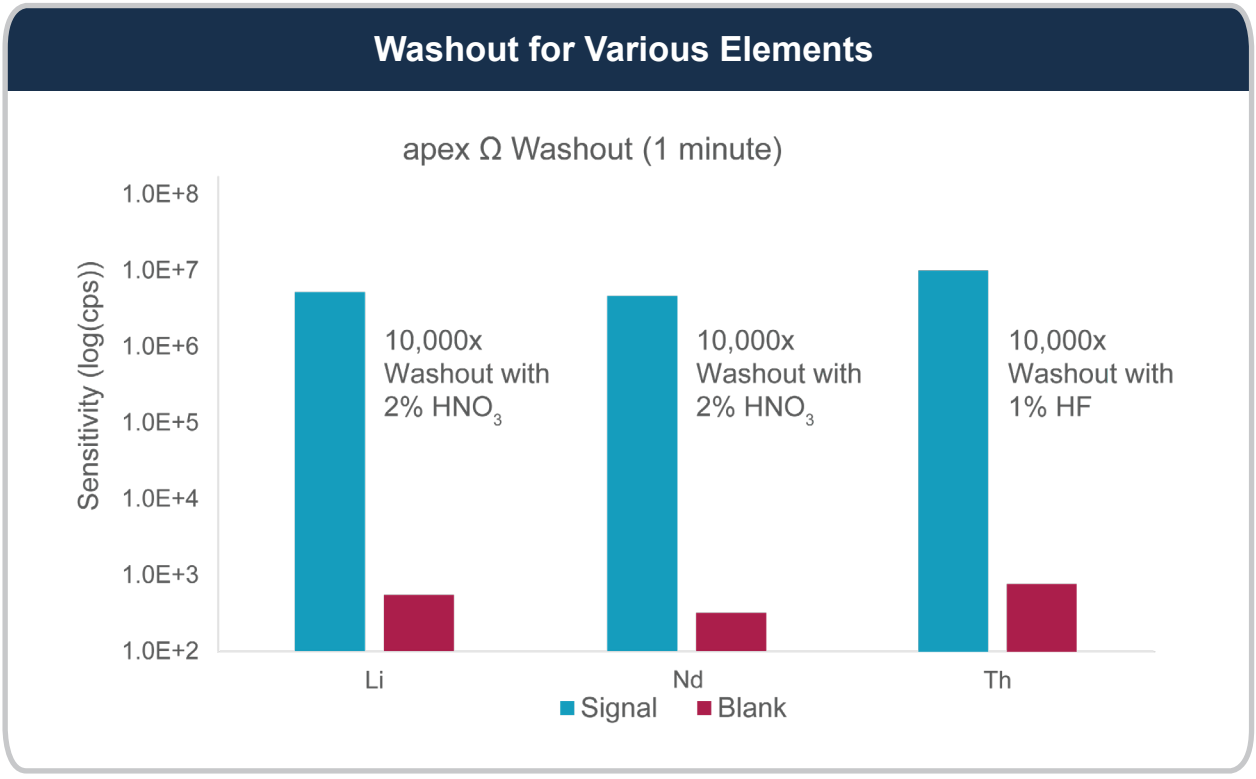


Figure 7: Replicate injections illustrate greater than four orders of magnitude (10,000x) washout is achieved in 1 minute for Nd. Two percent HNO_3 is used to achieve 10,000x washout for Li and Nd, whereas, classic memory prone elements such as Th are washed out similarly with 1% HF.

Add micro*FAST* MC

Syringe Loading Injection

The micro*FAST* MC precisely and accurately loads a loop and then smoothly injects solution to a µFlow concentric nebulizer at defined rates from 5-1000 µL/min. The valve on the flow injection system selects from two discrete, parallel flow paths for standards and samples. This allows rapid switching between sample and standard solutions with minimal dead volume between the valve and the nebulizer.

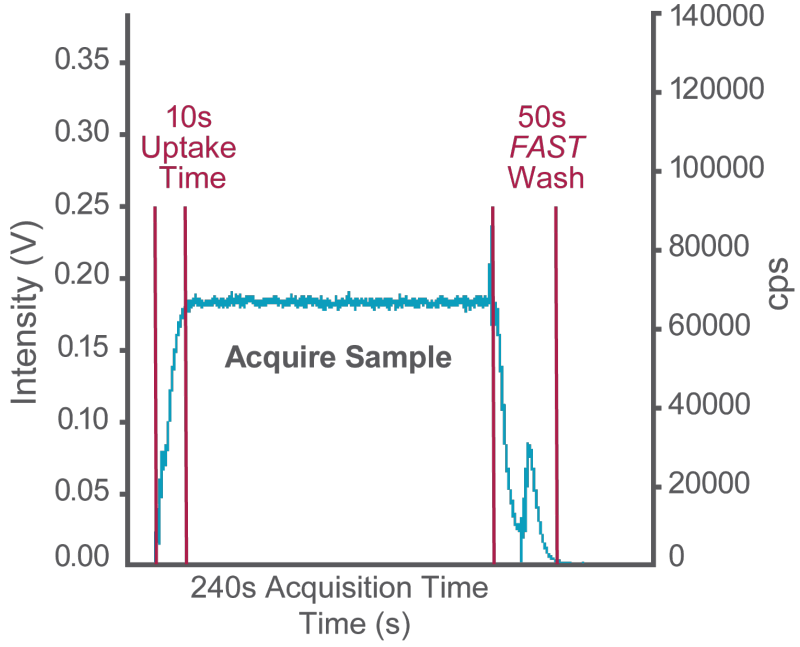
Features

- Total sample consumption
- Eliminate waste
- Micro volume samples
- Micro flow rates
- Inject complete sample
- Dual loop system
- High sample throughput

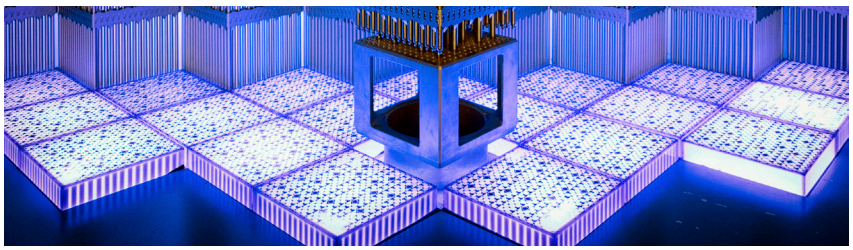
Pu Injection Parameters

- 220 µL of sample
- 50 µL/min flow rate
- ~4 minute sample acquisition
- 1 minute total uptake and washout
- 5 minute sample to sample

4 min Injection Profile for 500 Femtograms of ^{239}Pu



Data courtesy of Dr. Cole Hexel and Brian Tickior CRNL.



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