

Enhanced Analysis of HF solutions by ICP-AES

Problem: High silica samples to be analysed by radial ICP-AES. Multi-element analysis required with detection difficulties for Ag and K with standard sample introduction system.

Solution: Apex HF sample inlet system.



Apex HF high sensitivity, HF resistant sample inlet system

The Apex HF is an HF resistant, compact, simple-to-use liquid introduction system that increases ICP-AES sensitivity by up to an order of magnitude.

Sample transport efficiency is enhanced by nebulizing liquid samples into a heated cyclonic spray chamber using a special version of the PFA-ST nebulizer.

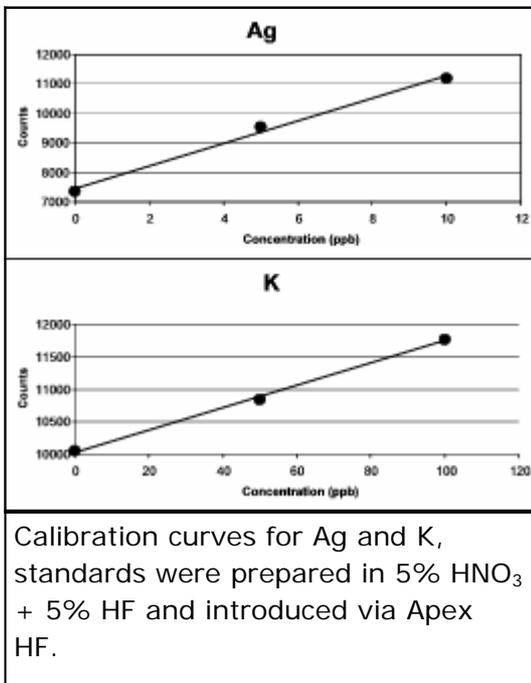
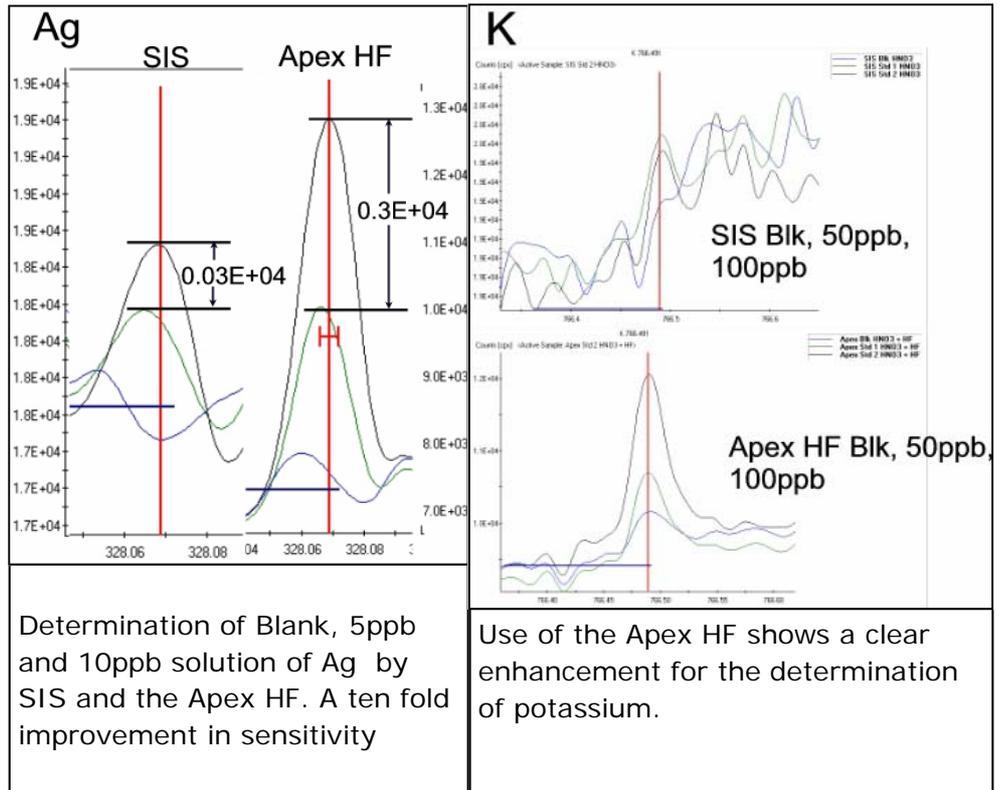
A low-volume Peltier-cooled desolvation system is incorporated for on-line removal of solvent vapour.

Apex HF Advantages:-

- HF Resistant
- Increases sensitivity 6 to 10 fold.
- Pumped or self-aspirated nebulizer.
- Compact design – takes up little space.
- Consumes less sample than standard introduction systems.
- Integrated 4 channel peristaltic pump for waste removal.
- Designed for easy cleaning and low maintenance.

The Apex HF was compared to a standard introduction system (SIS), solutions for the SIS were prepared in 5% HNO₃ while for the Apex HF solutions were prepared in 5% HNO₃ + 5% HF.

Enhancement for both K and Ag was observed along with sensitivity improvements in all elements, allowing for their determination at lower levels.



Sensitivity enhancement of Apex HF over Scott Spraychamber on radial ICP-AES

Line	Enhancement factor	Line	Enhancement factor
Cr 267.716	6	Mn 257.611	6
Zn 213.856	6	Zr 339.198	8
Mo 202.030	6	Ba 455.404	6
Co 230.786	7	Sr 407.771	6

- ✓ Direct analysis of HF digested samples.
- ✓ 6-10 fold improvement in sensitivity over standard introduction systems.
- ✓ Low rsd's of ~1%.
- ✓ Reduced flow rate, 400µL/min compared to 2mL/min for SIS.
- ✓ Simple to use, one switch operation.

Elemental Scientific Inc.
2440 Cuming St.
Omaha, NE 68131 USA

Phone: 402.991.7800
Fax: 402.991.7799
Email: esi@icpms.com