

Introduction

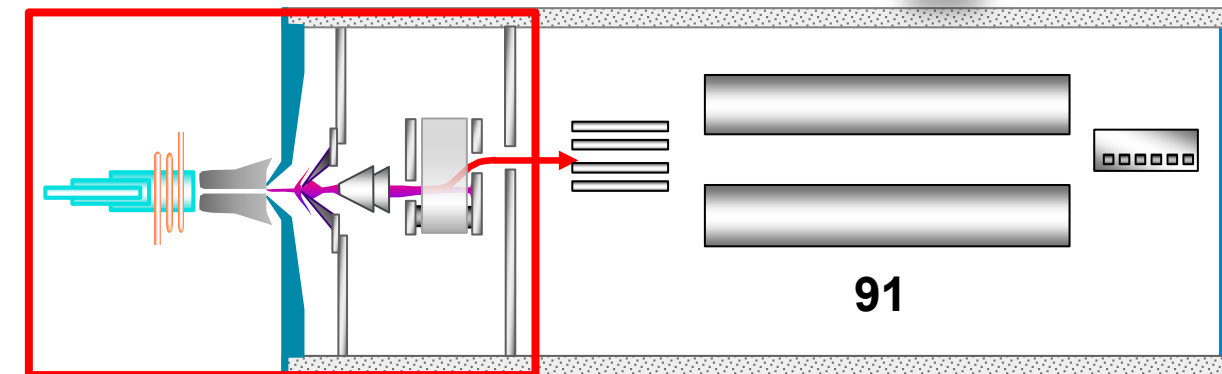
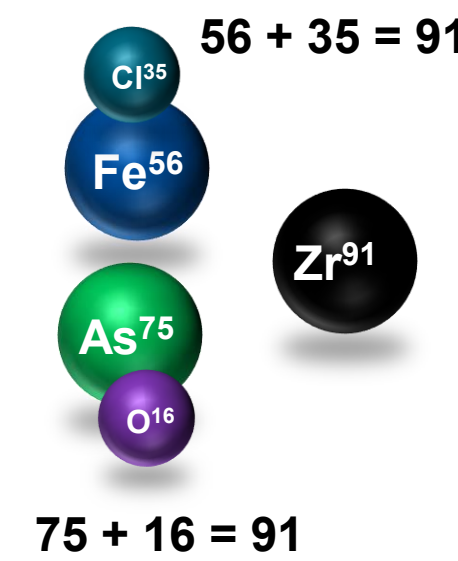
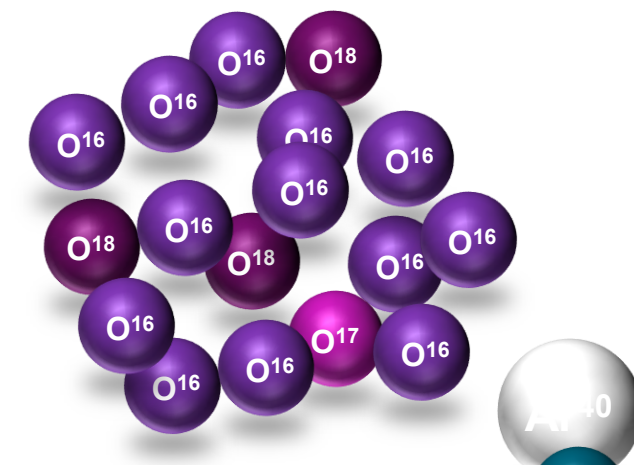
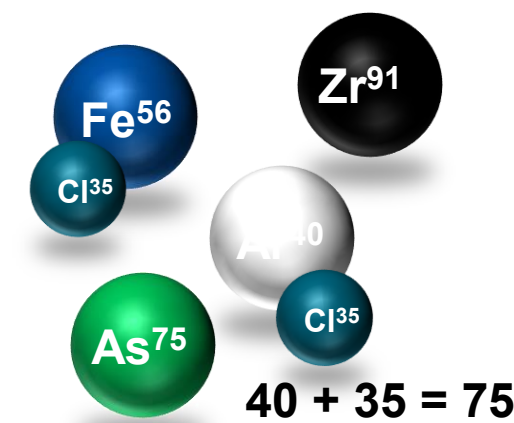
Important Performance Considerations for Environmental Analysis

- **Sensitivity**
- **Interference Removal**
- **Matrix Tolerance**
- **Linear Dynamic Range**

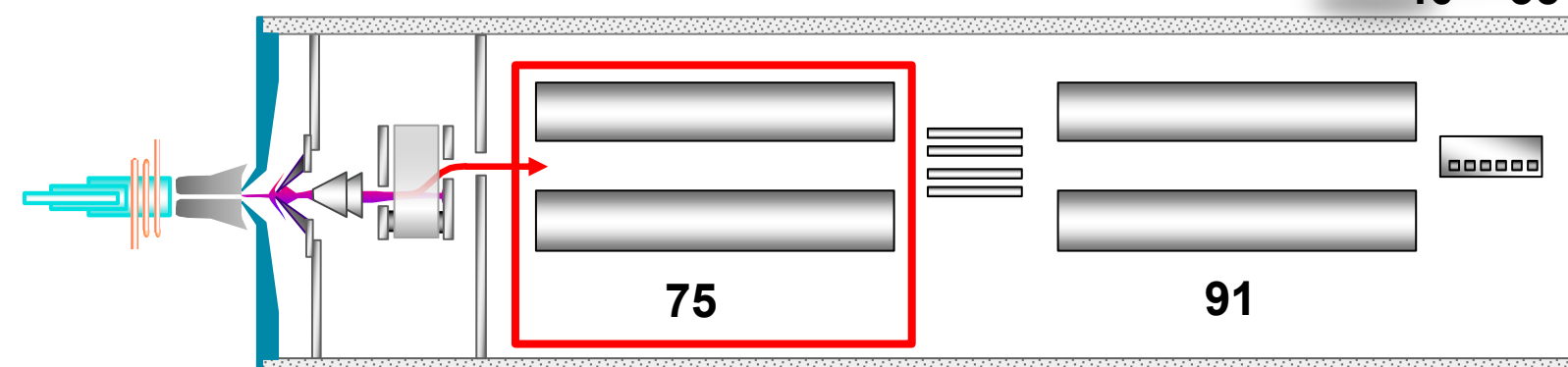
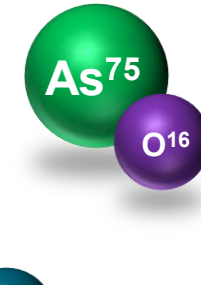
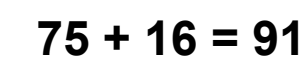
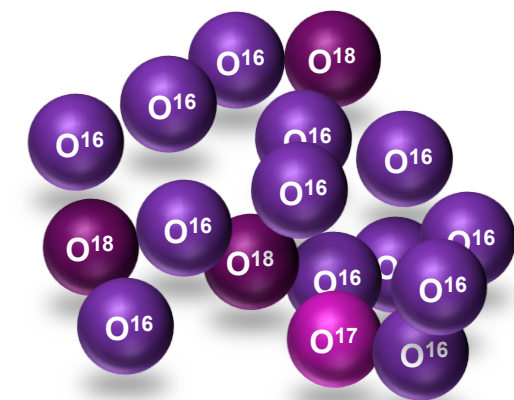
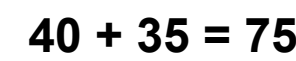
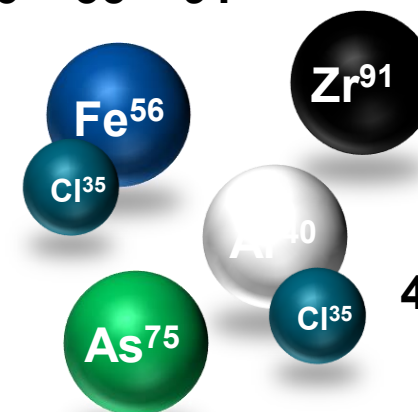
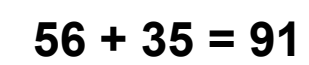


Results and Discussion

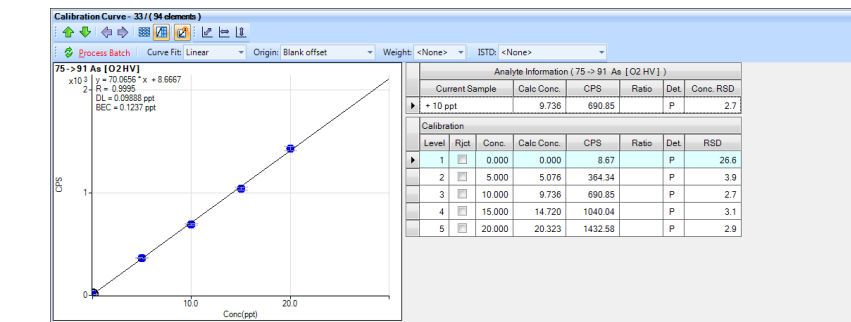
Mass Shift Mode



Effective Use of MS/MS Mass Shift with True ICP-QQQ



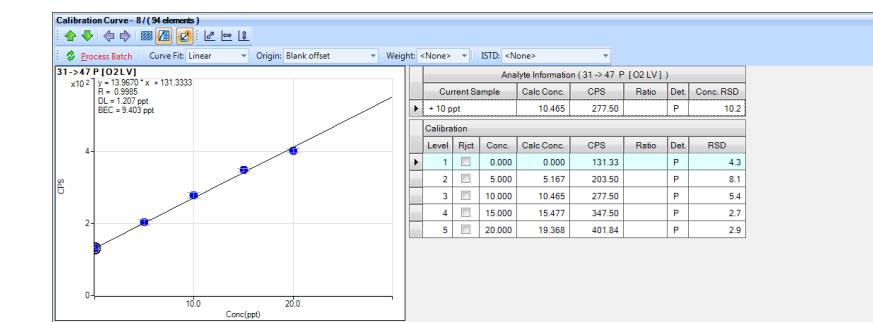
Use of Reactive Gases with SQ ICP-MS



As 75 → 91 [02 mode]

DL: 0.10 ppt

BEC: 0.12 ppt



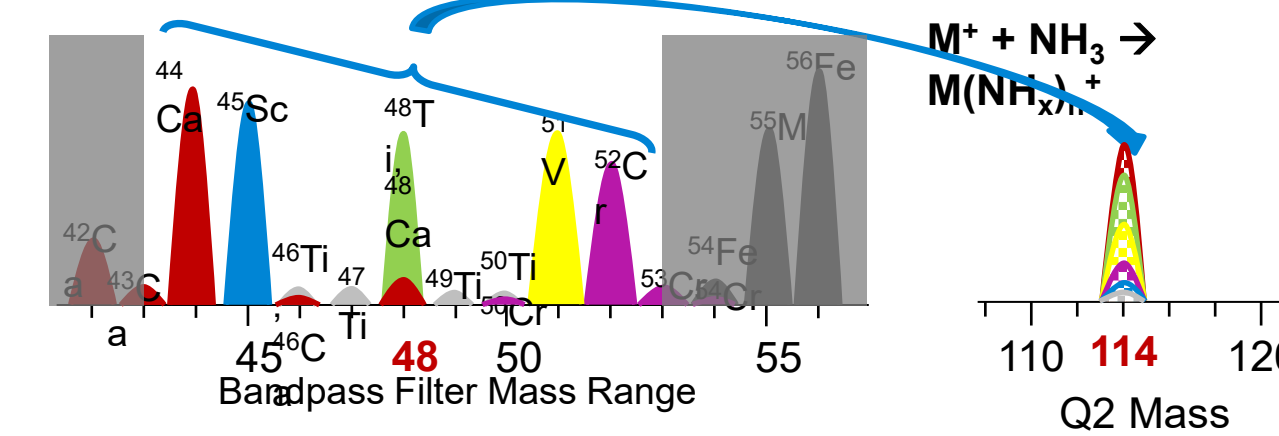
P 31 → 47 [02 mode]

DL: 1.2 ppt

BEC: 9.4 ppt

Example of Titanium Analysis with NH₃ Cell Gas

All these ions enter the cell & react...



- **Target** product ion is $^{48}\text{TiNH}(\text{NH}_3)_3^+$ at m/z 114
- **Bandpass window 10 mass unit (mass 43-53)**
- **Product ions contain numerous ions at mass 114**

ORS cell on the 7850/7900 is **an effective way** to perform He mode

Octopole reaction cell: small $\rightarrow$ fast gas mode switching time

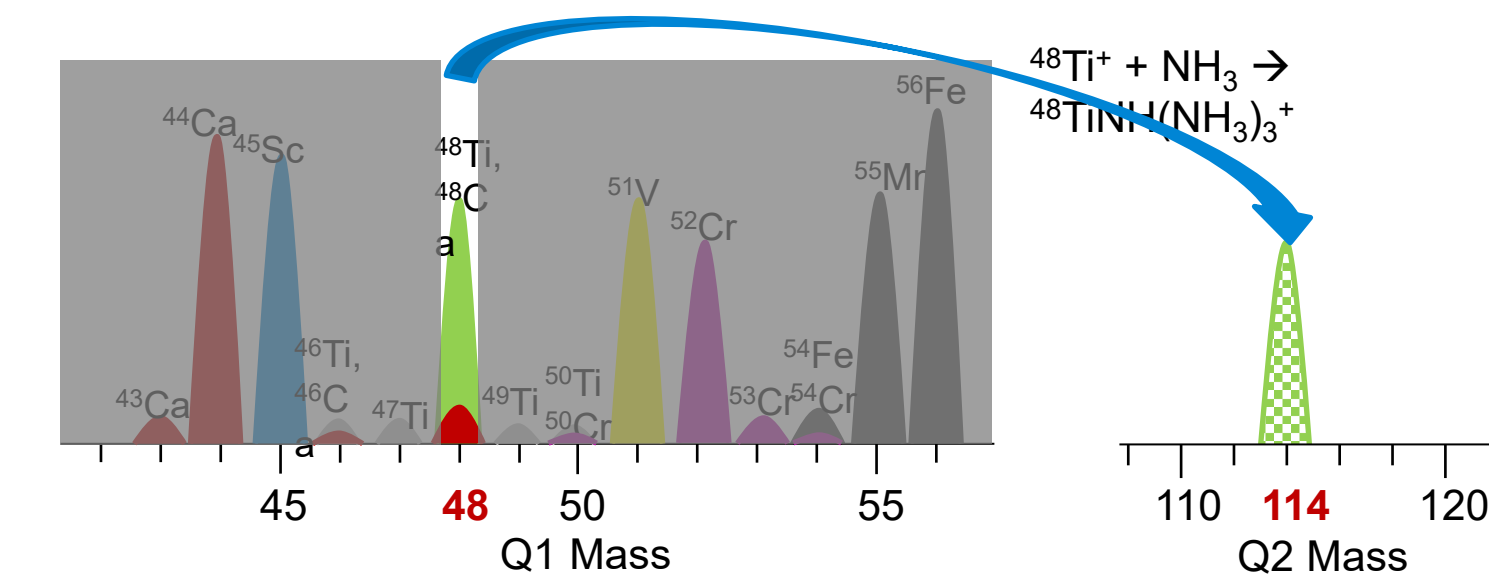
Octopole cell (compared to quadrupole cell): good ion stability → better reaction with cell gas

→ better interference removal

True first quad Q1: unit-mass filter → complete control of cell gas reaction

→ better interference removal

Two unit-mass quads: excellent abundant sensitivity → trace detection in heavy matrices



- Unit mass true quad Q1, only mass 48 enters
- Only target product ions in mass 114 detected