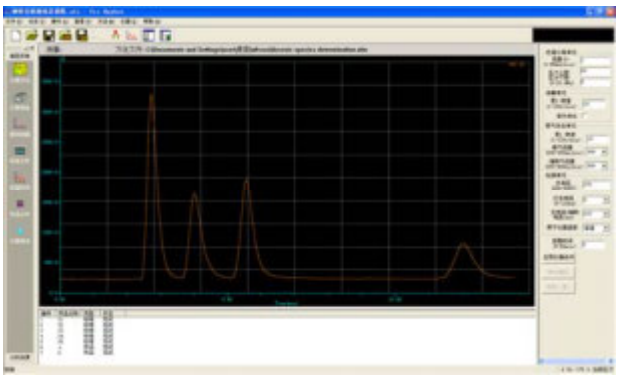
# AF-610D2 HPLC-VG-AFS Speciation Analyzer

- Low cost and perfect performance for speciation and total amount analysis of heavy metal elements, comparable to ICP-MS.
- High automation speciation analysis, realizing control of the whole system (including HPLC separation system) with single software.

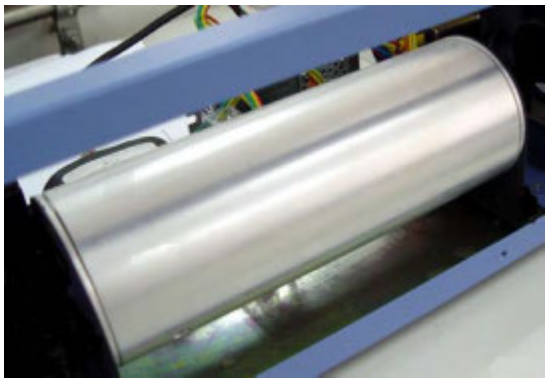
**Features:**

- Comparable total amount analysis performance with ICP-MS: Ultra-trace level (ng/mL) determination of As, Sb, Bi, Zn, Cd, Hg, Ge, Sn, Pb, Se and Te.
- Comparable speciation analysis performance with HPLC/IC-ICP-MS: Ultra-trace level (ng/mL) speciation analysis of As, Sb, Hg, Se and Te.
- Modular design
  - Easy for operation and maintenance;
  - Four functional modules include HPLC separation unit, UV digestion unit, vapor generation unit, and detection unit.
- Brand new *Pro Hyphen* workstation software for both speciation analysis and total amount analysis, realizing control of the whole system (including HPLC separation system) with single software.

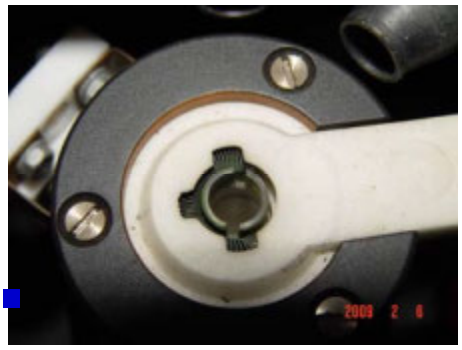


- Innovative and specially designed interface
  - Effectively reduces the peak broadening;
  - High inertia (PEEK) interface for most of reagents.
- Optimized UV digestion system, with long lifetime and high stability
  - Long lifetime ( > 8000hours), low pressure mercury lamp;

- High efficiency 254nm UV light output; 185nm UV light is prohibited and no ozone is generated;
- Fully sealed device for operator's safety;
- Multiple-step reflection greatly improves UV light utilization;
- High precision temperature control system ensures high UV light output stability;
- Low dead volume (0.8mL) reaction coil.



- Advanced gas-liquid separator, with higher signal-to-noise ratio
  - Comparable performance with Nafion drier;
  - Anti-foaming design, especially suitable for ion pair separation method;
  - Waste liquid auto drain design, no peristaltic pump is necessary.



- Low temperature atomization technique
  - Argon-hydrogen flame auto ignition;
  - Stable temperature control system;
  - Very high stability atomization efficiency.

- Dual peristaltic pumps to deliver reagents with different flow rates.
- High-efficiency mercury decontamination device to protect analyst's health.
- Three analytical modes can be switched over freely through valves:
  - Total amount analysis mode;
  - Direct vapor generation mode;
  - UV digestion mode.

## Specifications

| | | |
|---|---|---|
| Detection Range | | 1. Speciation analysis of As, Hg and Se, etc. ;<br>2. Trace or ultra-trace analysis of 11 heavy metal elements, As, Hg, Se, Pb, Ge, Sn, Te, Bi, Sb, Cd, and Zn ;<br>3. Single element determination. |
| Working Environment | | Power:220±22V, 50±2.5Hz; Temperature: 5~40℃; Relative humidity: 0～85%. |
| Detection Limit | Speciation Analysis | AsB<1ng/mL, As(Ⅲ)<0.3ng/mL, DMA<0.4ng/mL, MMA<0.3ng/mL, As(V)<0.5ng/mL ;<br>Veterinary medicine containing arsenic: PASA<0.5ng/mL, NHPAA<0.5ng/mL, NPAA<0.5ng/mL;<br>SeCys<1.5ng/mL, SeMeCys<2ng/mL, Se(IV)<1ng/mL, SeMet< 3ng/mL, Se(VI)<4ng/mL;<br>Hg（Ⅱ）<0.1ng/mL, MeHg<0.2ng/mL, EtHg< 0.2ng/mL, PhHg< 0.4ng/mL ;<br>Sb(III) <0.5ng/mL, Sb(V) <1ng/mL;<br>Te(IV) <2ng/mL, Te(VI) <5ng/mL. |
| | Total Amount Analysis | As、Sb、Bi、Se、Pb、Sn、Te <0.01μg/L;<br>Cd、Hg <0.001μg/L;<br>Ge <0.05μg/L;<br>Zn <1.0μg/L. |
| Reproducibility | Speciation Analysis | <5.0% |
| | Total Amount Analysis | <1.0% |
| Linear Range | | Better than three orders of magnitude |

# AF-610D Atomic Fluorescence Spectrometer

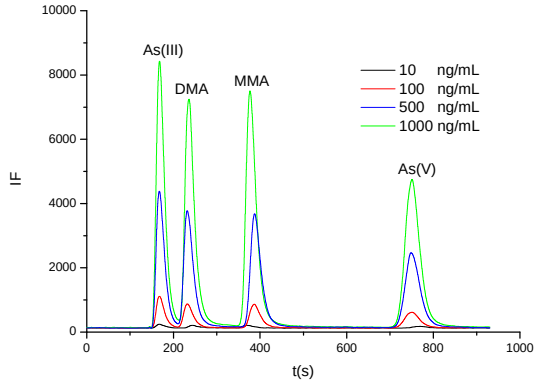
- Low cost and perfect performance for total amount analysis and coupled with various chromatographs for speciation analysis of heavy metal elements.
- Comparable with ICP-MS.

**Features:**

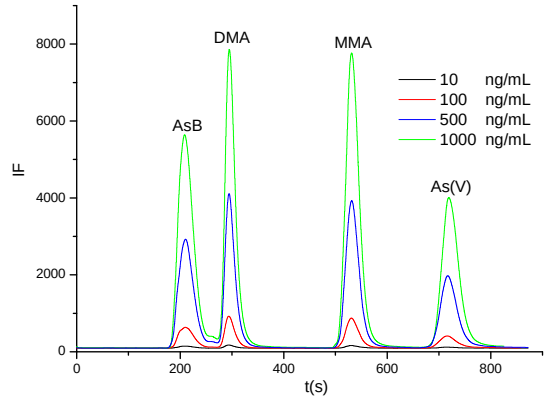
- Comparable total amount analysis performance with ICP-MS: Ultra-trace level (ng/mL) determination of As, Sb, Bi, Zn, Cd, Hg, Ge, Sn, Pb, Se and Te.
- Comparable speciation analysis performance with HPLC/IC-ICP-MS: Ultra-trace level (ng/mL) speciation analysis of As, Sb, Hg, Se and Te, when coupled with HPLC/IC.
- Advanced gas-liquid separator, with higher signal-to-noise ratio
  - Comparable performance with Nafion drier;
  - Anti-foaming design, especially suitable for ion pair separation method;
  - Waste liquid auto drain design, no peristaltic pump is necessary.
- Low temperature atomization technique
  - Argon-hydrogen flame auto ignition;
  - Stable temperature control system;
  - Very high stability atomization efficiency.
- Innovative and special designed interface:
  - One step coupled with HPLC/IC ;
  - Effectively reduces the peak broadening;
  - High inertia (PEEK) interface for most of reagents.
- Optimized UV digestion system, with long lifetime and high stability
  - Long lifetime ( > 8000hours), low pressure mercury lamp;
  - High efficiency 254nm UV light output; 185nm UV light is prohibited and no ozone is generated;
  - Fully sealed device for operator's safety;
  - Multiple-step reflection greatly improves UV light utilization;
  - High precision temperature control system ensures high UV light output stability;
  - Low dead volume (0.8mL) reaction coil.
- Specially designed software for speciation analysis and total amount analysis.
- Dual peristaltic pumps to deliver reagents with different flow rates.

# Typical Chromatograms of Elemental Speciation
# By AF-610D & AF-610D2

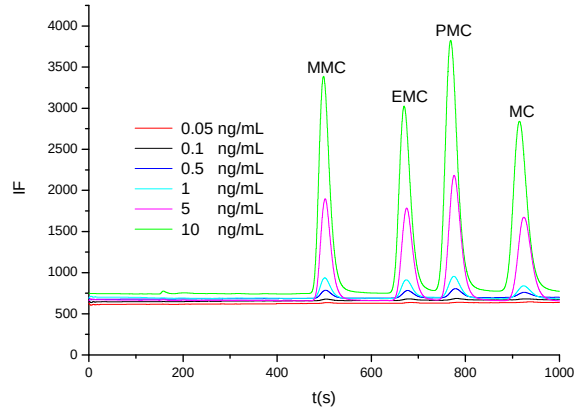
(1) As(III), DMA, MMA, As(V)



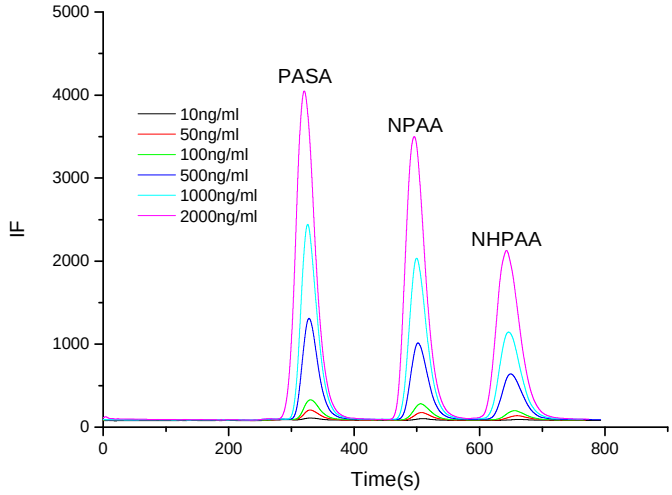

(2) AsB, DMA, MMA, As(V)




(3) MMC, EMC, PMC, MC



(4) PASA, NPAA, NHPAA




(5) SeCys, Se(IV), SeMet, Se(VI)