

Specifications for George Mason University's Shared Research Instrumentation Facility's Atomic Absorption Spectroscopy (AAS) system located in the Department of Chemistry, Science and Technology I building. For further information see <http://www.gmu.edu/departments/SRIF> or write to the SRIF Lab Manager, Tom Huff at thuff@gmu.edu.

Atomic Absorption Spectrometry

Instrument Uses

The Perkin Elmer 5100PC atomic absorption spectrometer is used to detect the presence of elemental metals in liquid samples or sample extracts. The instrument has two modes of operation: flame ionization and graphite furnace ionization. The uses of this instrument are very diverse. It is used in environmental analysis, forensics, metallurgy to name a few. The following applications are examples of possible uses for this instrument:

- ⇒ Analysis of nutrient metals (Fe, Ca, Al, Mg, etc.) in environmental soil samples at parts per million (ppm) concentrations.
- ⇒ Analysis of trace metals (Hg, Pb, Se, As, etc.) in environmental water samples at parts per billion (ppb) concentrations.
- ⇒ Calcium determination in food products
- ⇒ Iron levels in blood samples

Instrument Specifications

- ⇒ Large collection of elemental lamps
- ⇒ Flame-ionization burner head for acetylene/air mixture
- ⇒ Flame-ionization burner head for acetylene/nitrous oxide mixture
- ⇒ Graphite furnace with automated sampler
 - Automated standard curve creation from single stock standard
 - Automated sample dilution and addition of matrix modifier
 - Automated graphite tube conditioning and cleaning
- ⇒ Perkin-Elmer instrumental control and data analysis software
 - Software database of standard conditions for all metals
 - Standard curve creation with editing
 - Automated curve reslope feature
 - Custom report formatting

For more background on this type of instrument, see the SRIF online Atomic Absorption tutorial at <http://www.gmu.edu/departments/SRIF/tutorial/aas/aas.htm> To see this instrument and learn what it can do, sign up for the SRIF seminar series held each semester on the Prince William Campus.