Multi-collector ICP-MS

**Nu Plasma**
Inductively Coupled Plasma - Mass Spectrometer

**High precision isotope analyses:**
- cosmochemistry
- environmental chemistry
- geochemistry
- geochronology

Element detection limits are a function of spot size, mass of the isotope, and the element’s 1st ionization potential (ip). Ca, La, and Ta have similar 1st ip, while Os and Ta have similar masses.

**Innovative Collector Assembly:**
- 12 faraday cups in a fixed assembly
- 17% mass dispersion (e.g., simultaneous $^6$Li - $^7$Li)
- zoom optics to separate out masses
- multi-multiplier for simultaneous ion counting

**Zoom Lens ("L1")**

**Collector Assembly**

**2 Deep UV lasers: excimer & Nd:YAG**
- DUV wavelength couples effectively with most materials
- for in situ analyses of solids & liquids
- for use in: cosmochemistry, environmental chemistry, geochemistry and geochronology

**Solid state Nd:YAG laser**
- 5th harmonic of Nd:YAG
- $\lambda = 213 \text{ nm}$,
- $E = 5.83 \text{ eV}$

**Element detection limits**
- Ca, La, and Ta have similar 1st ip, while Os and Ta have similar masses.

Rapid scanning & high sensitivity:
- abundance determinations for most elements, excepting noble gases, from Li to U
- solution analyses of waters, sludges, airborne particulates, dissolved rocks and metals, etc.
- in situ laser ablation analyses of solids or liquids (including fluid inclusions)
- low detection limits: e.g., U in solution has a detection limit of <1 ppq (i.e., $1 \times 10^{-15} \text{g/g}$)
- high resolving power to avoid interfering ionsbars

Fast scanning magnet - needed for time resolved analyses

**Time resolved spectrum - analyses of a basaltic glass**

The instruments in this facility have been jointly funded by the University of Maryland and the National Science Foundation.


