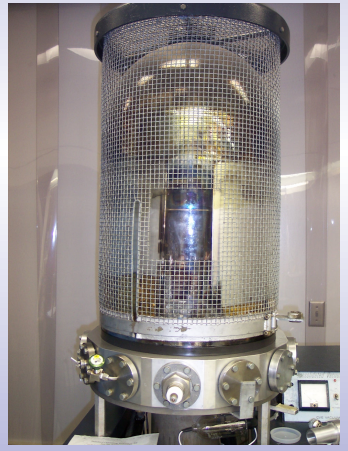
Advantages of a Grazing Incidence Monochromator in the Extreme Ultraviolet

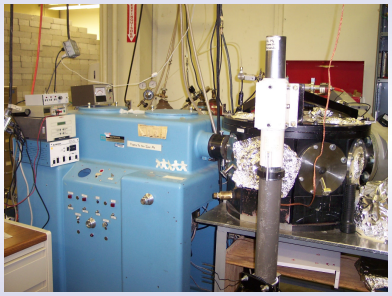
By Sarah Barton

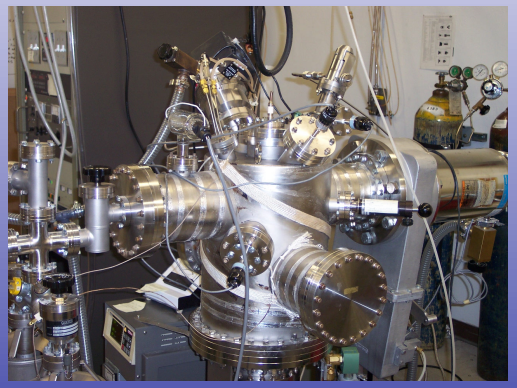
Thin Films

We "grow" films with thicknesses in the range of 200-400 Å

We measure reflectance properties of different films in the extreme ultraviolet



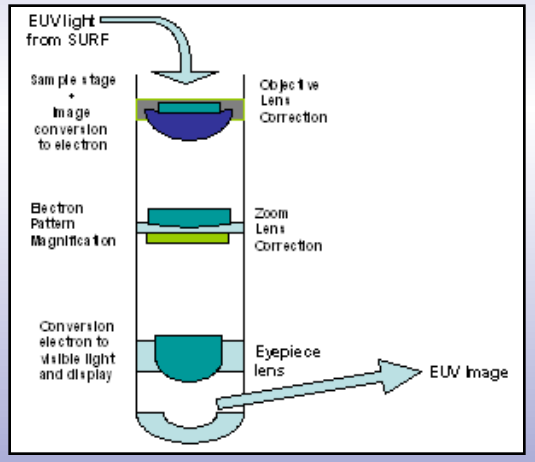




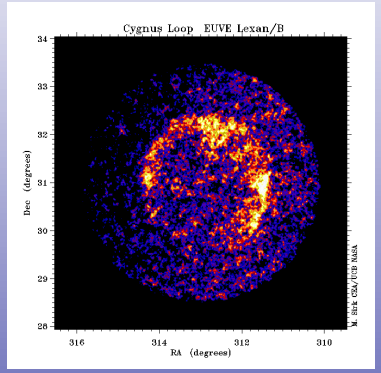
Methods used for creating films include sputtering and evaporation

Past Projects and Applications

- ESA Mars Express Probe, Venus Express Probe



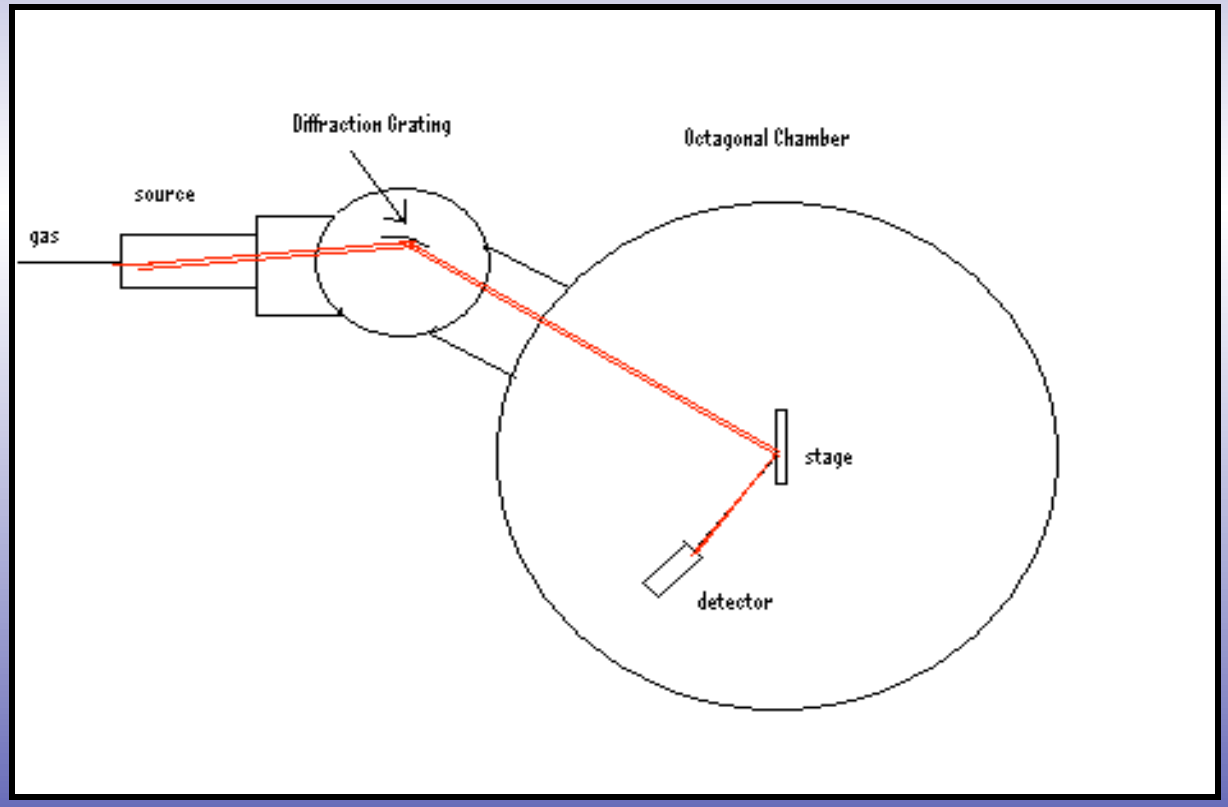
- Astronomy
- Microscopy
- Plasma Diagnostics



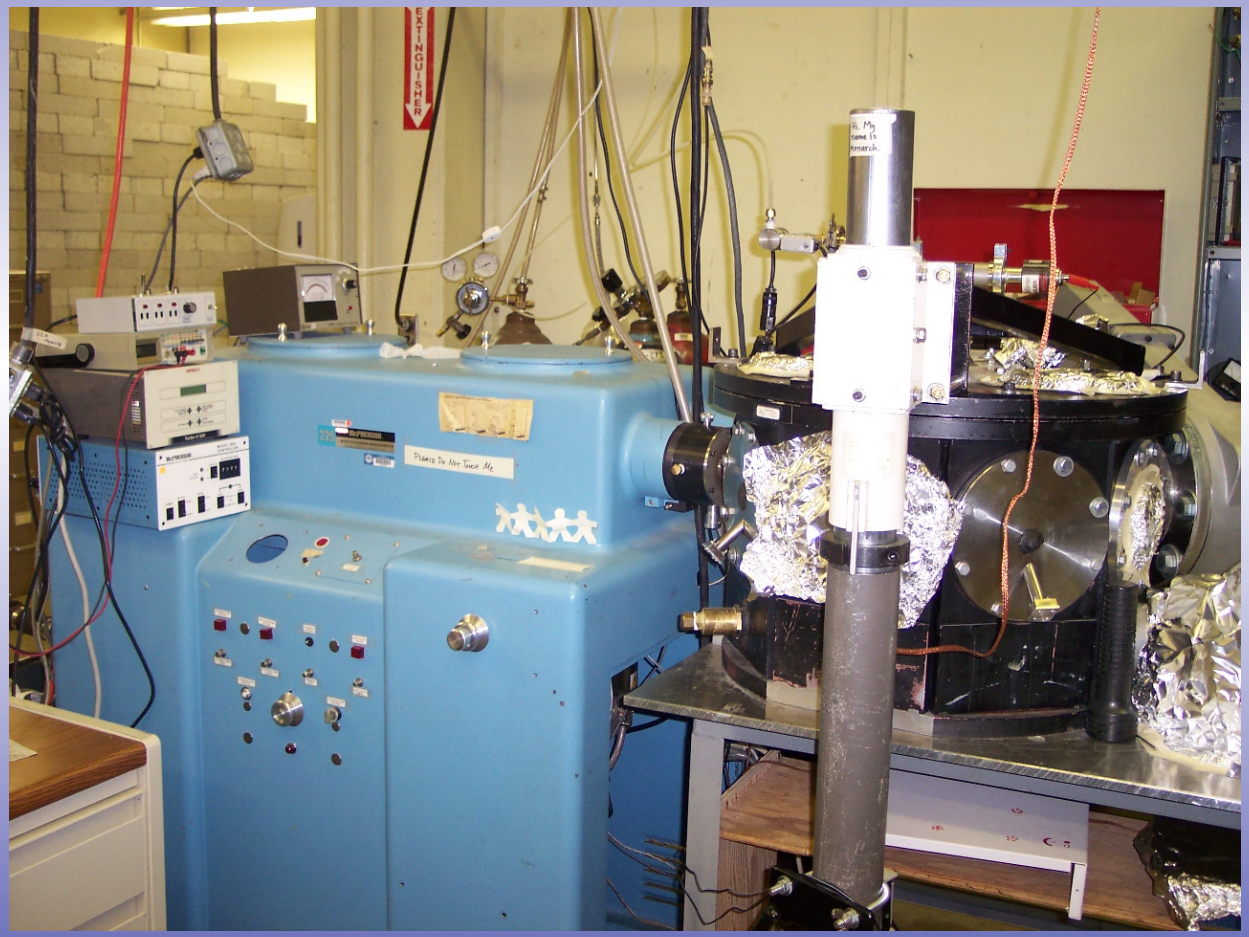
The Advanced Light Source at Lawrence Berkeley National Laboratories

- Synchrotron
- High Intensity
- Shorter Wavelengths
- Continuous Spectrum
- Many Different Gratings
  - Including Grazing Incidence

What is a Grazing Incidence Monochromator Anyway?



Set-Up



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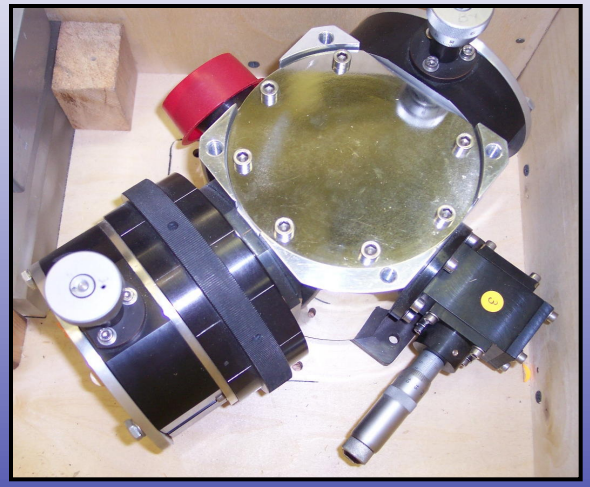
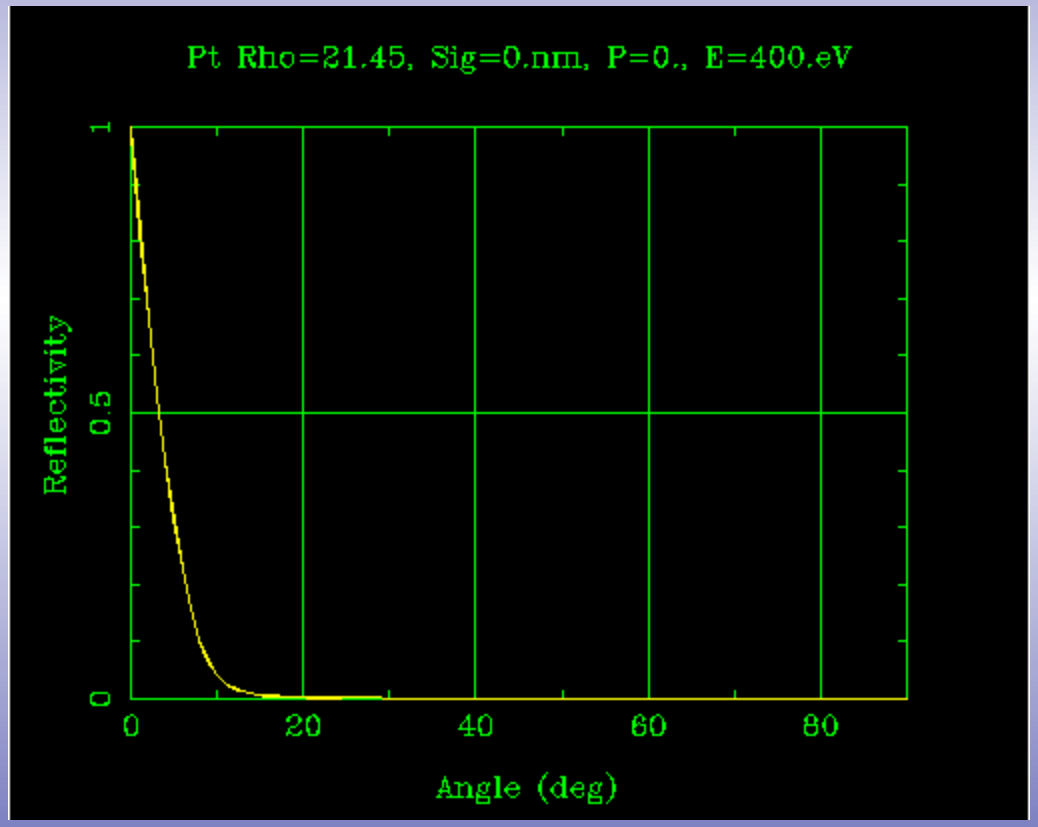
Differences

- Near-Grazing vs. Near-Normal Angles
- More Reflective for Higher Wavelengths
- Possible Higher Intensity
- Smaller Size

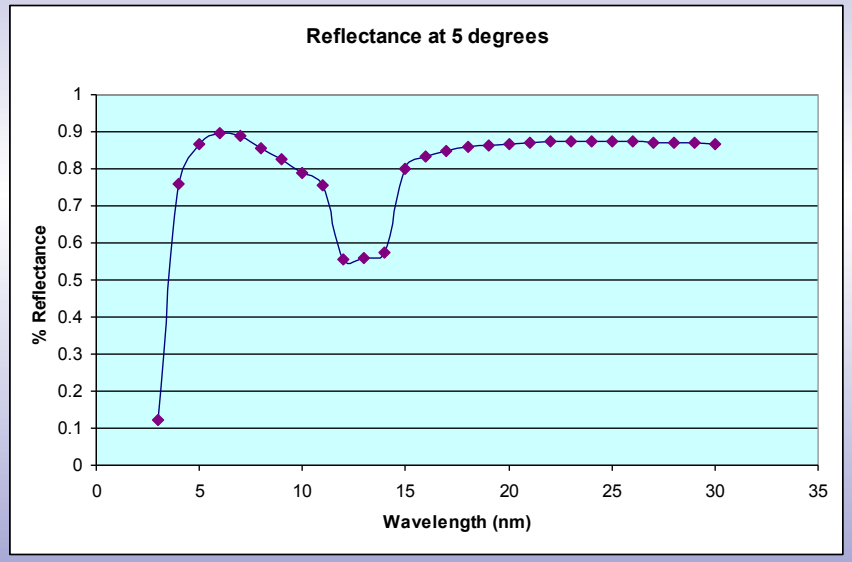


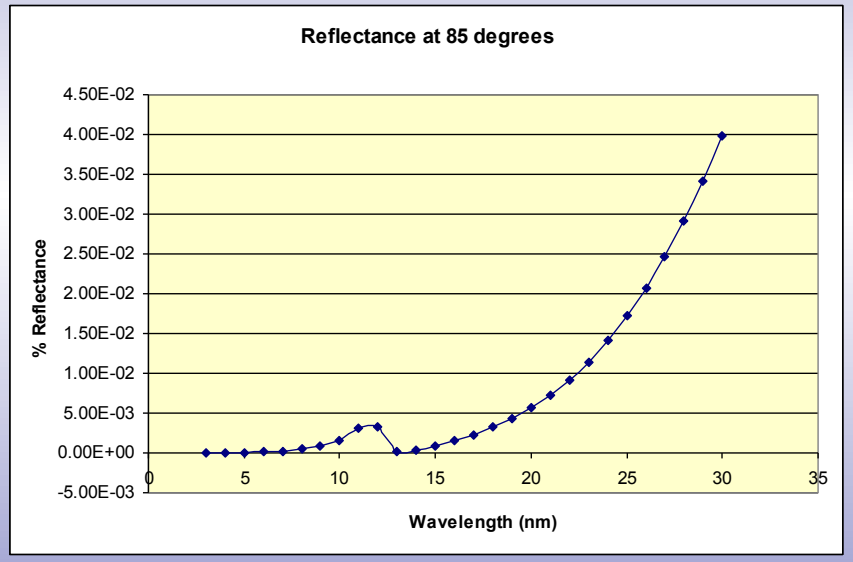
Reflection and Absorption

- 30 Å
- Pt



Why We Care


Reflectance at 5 degrees
% Reflectance
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
5
10
15
20
25
30
35
Wavelength (nm)


Reflectance at 85 degrees
% Reflectance
4.50E-02
4.00E-02
3.50E-02
3.00E-02
2.50E-02
2.00E-02
1.50E-02
1.00E-02
5.00E-03
0.00E+00
-5.00E-03
0
5
10
15
20
25
30
35
Wavelength (nm)

Benefits

- Less Absorption
- Higher Wavelengths
- 2 Sources

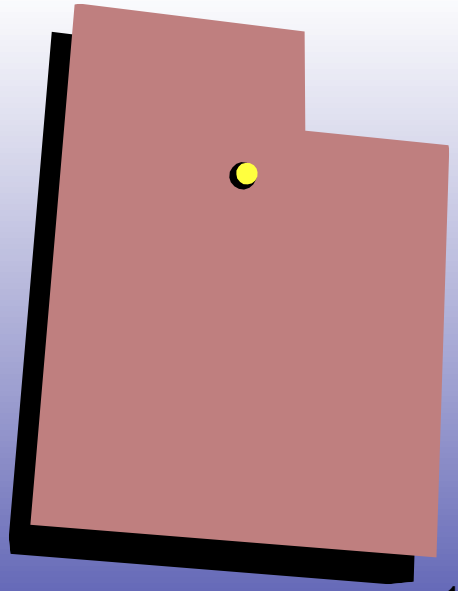
- And…

Convenience!

The Under Ground Lab

is a lot closer than

California!



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