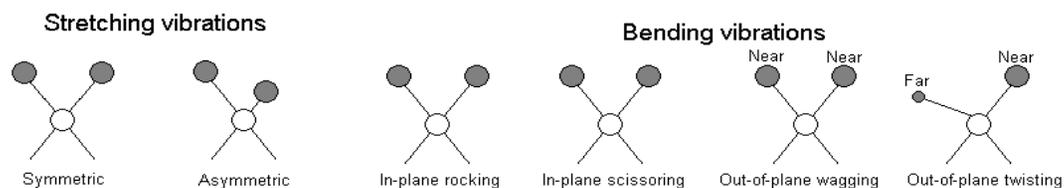


Infrared Vibrational Microspectroscopy

Vibrational IR spectroscopy from $<100\text{ cm}^{-1}$ to $>5000\text{ cm}^{-1}$

- molecules have characteristic vibrational frequencies
- sensitive to molecular composition, bonding, structure



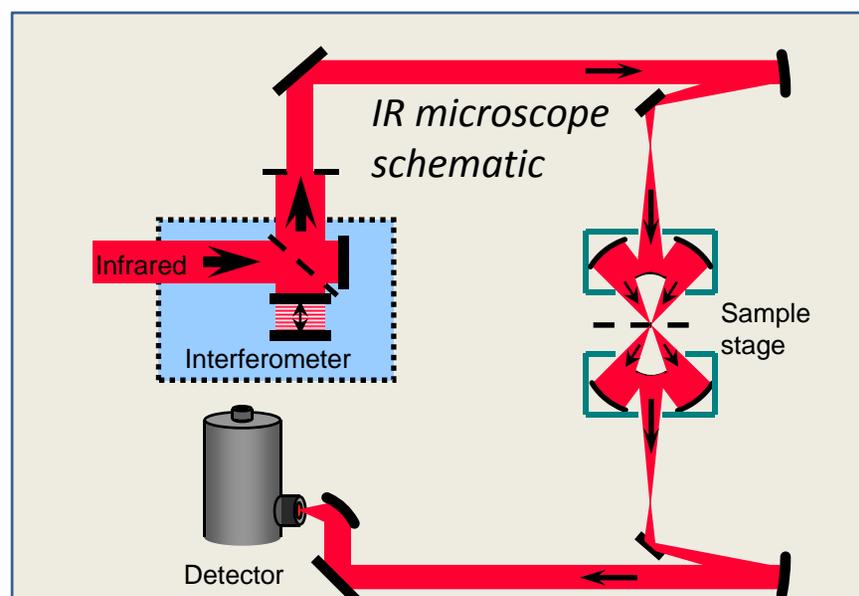
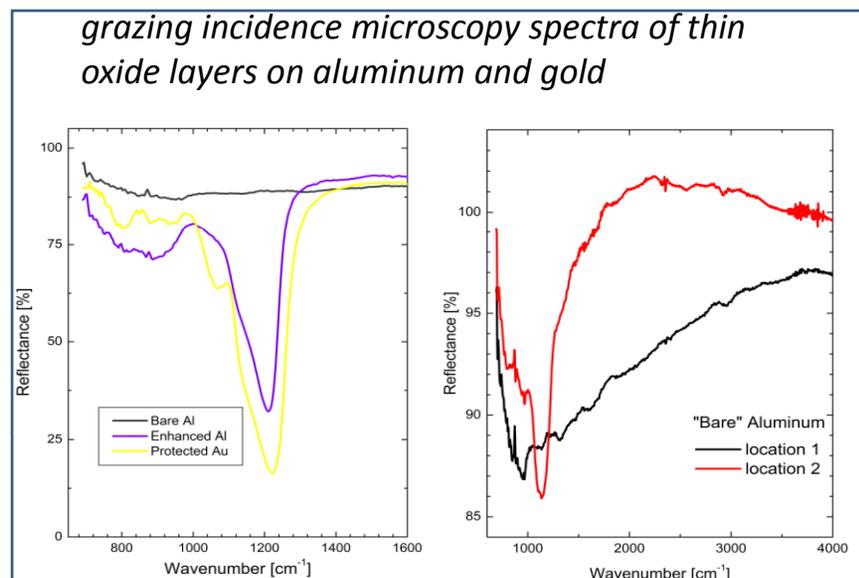
- Allows many techniques (transmission, reflection, microscopy)
- Grazing Incidence for sensing molecules at metal surfaces

High-brightness infrared synchrotron source

- up to 3 orders of magnitude higher brightness than thermal source
- excellent signal-to-noise when focused to diffraction limit ($\sim\lambda$)
- full spectral coverage from THz through visible
- well-suited to microspectroscopy and low-throughput techniques (e.g. grazing incidence)

NSLS operates several infrared beamlines

- many with microspectrometer systems



NSLS Infrared Microspectrometer Systems

Beamlines with IR microspectrometers

U2A (ultra high-pressure diamond cells)

U2B (mid-IR w/UV fluorescence)

U10 (full-field imaging with FPA detector)

U12IR (far-IR & THz microspectroscopy)

- *can be used for transmission or reflection including grazing incidence*
- *most have scanning stage for mapping*

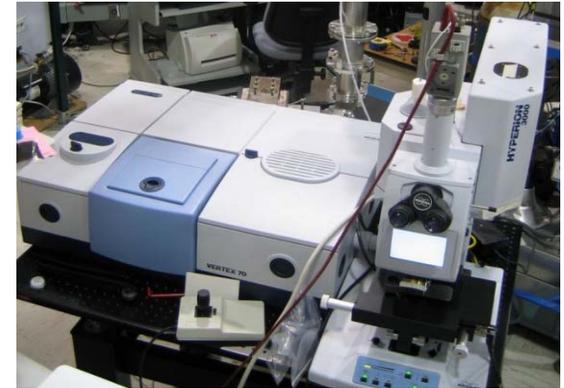
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U2B: Microspectrometer w/UV fluorescence



U10B: Imaging microspectrometer



U2A: Microspectrometer for extreme pressures

U12IR: Far-IR / THz microspectrometer

