Port 02 – Mid-IR FPA Imaging (IRENI)

This beamline is UW-Milwaukee and SRC owned. Current as of June 2012

Wide-Field Infrared Microspectroscopy Imaging (IRENI: Infrared Environmental Imaging) using a Focal Plane Array (FPA) detector with programmable mapping stage coupled to a Fourier Transform Infrared (FT-IR) spectrometer is available for high resolution IR imaging [1-3]. The effective pixel size of 0.54×0.54 μm^2 (transmission)/1.1×1.1 μm^2 (reflection) allow spatial oversampling for all wavelengths, providing spatially resolved images that are diffraction-limited at all wavelengths within minutes. The beamline can be reserved in daily or weekly increments, and the time requirements should be noted on the proposal. For detailed information on the capabilities of this IR beamline contact the beamline managers.

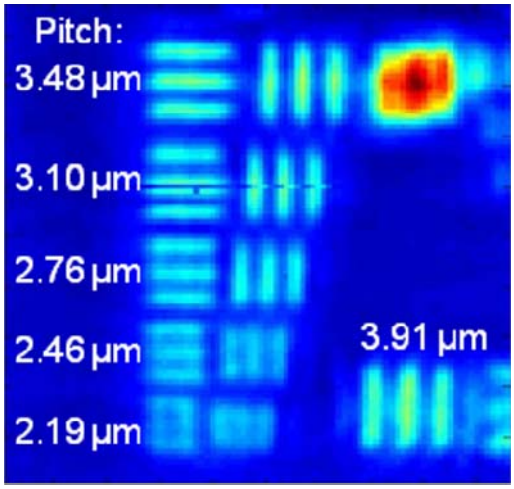

Fig. 1 High-resolution USAF target (group +8) at λ=2.64 μm (3794 cm^{-1})

Managers

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Technical

Energy Range: 850 – 5500 cm^{-1}

Best spectral resolution: 1 cm^{-1}

Details: 12 collimated light beams arranged in a 3×4 matrix side by side illuminate the sample.

*Transmission (**preferred**) mode:* effective geometric pixel size on the sample plane: 0.54×0.54 μm^2; one single shot FPA image covers an area of up to ~50×50 μm^2 (96×96 pixels); objective: 74× (NA=0.65).

Reflection/transflection mode: effective pixel size: 1.1×1.1 μm^2; one FPA image covers up to ~25×25 μm^2 (24×24 pixels); objective: 36× (NA=0.5).

Special Feature(s): Infrared microscope equipped with Focal Plane Array detector with programmable mapping stage for high-resolution IR imaging.

More information about IRENI: available at http://www.src.wisc.edu/ireni/

References:

[1] Nasse, M.J. et al. High-resolution Fourier-transform infrared chemical imaging with multiple synchrotron beams. *Nat. Methods* **8**, 413-416 (2011).

[2] Nasse, M.J. et al. Synchrotron infrared microspectroscopy imaging using a multi-element detector (IRMSI-MED) for diffraction-limited chemical imaging. *Nucl. Instrum. Methods Phys. Res., Sect. A* **582**, 107-110 (2007).

[3] Nasse, M.J. et al. Multi-beam synchrotron infrared chemical imaging with high spatial resolution: Beamline realization and first reports on image restoration. *Nucl. Instrum. Methods Phys. Res., Sect. A* **649,** 172-176 (2010). (doi:10.1016/j.nima.2010.12.095)

Port 031 – Infrared

This beamline is SRC owned. Current as of June 2012

Beamline

Infrared Spectromicroscopy
608-877-2031

Manager

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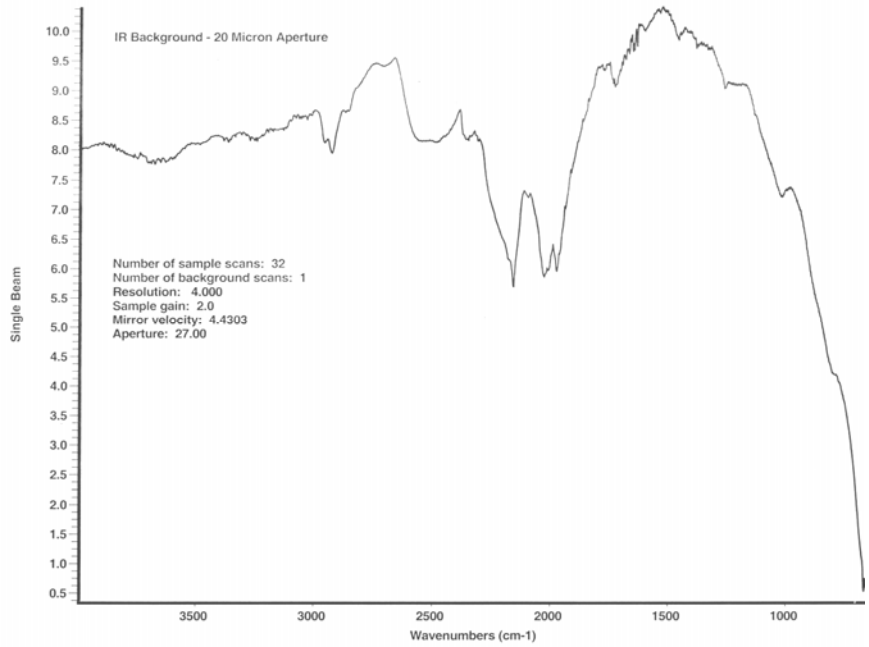

Technical

Energy Range	650 – 8000 cm^{-1}
Minimum Bandpass	0.125 cm^{-1}
Focused Spot	Collimated output light beam; position is 965 mm above floor. Spot size (horizontal x vertical) is 25 mm x 12 mm.
Automation	Computer controlled scanning
Special Feature(s)	Infrared microscope with programmable mapping stage

Port 032 – ES-1 Resist Exposure

This beamline is PRT owned. Current as of June 2012

Beamline

ES-1 Resist Exposure
608-877-2000

Manager

Paul Nealey
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Technical

Energy Range	1000 – 4000 eV @ 800 MeV
Focused Spot	Spot size (horizontal x vertical) is 50 mm x 8 mm.
Automation	Valves and exposure control.
Computer Interface	
Special Feature(s)	Programmable scanning stage