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# 5.3.2 Polymer STXM: First Tests

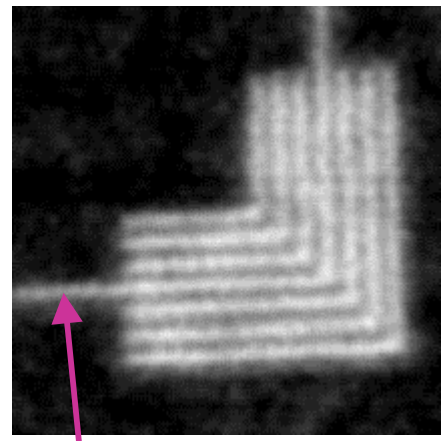
A.L.D. Kilcoyne, T. Tyliszczak, M. Kritchler, Peter Hitchcock, S. Fakra, K. Frank, C. Zimba, M. Rafailovich, J. Sokolov, G. Cody, E. Rightor, G. Mitchell, I. Koprinarov, E. Anderson, B. Harteneck, Adam Hitchcock, T. Warwick, H. Ade



Polymer STXM image of test pattern

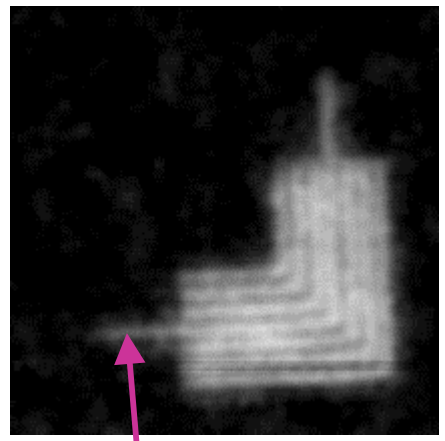
## CXRO test-pattern imaged at 390 eV

Resolved 40 nm  
1:1 features



Isolated 40 nm line

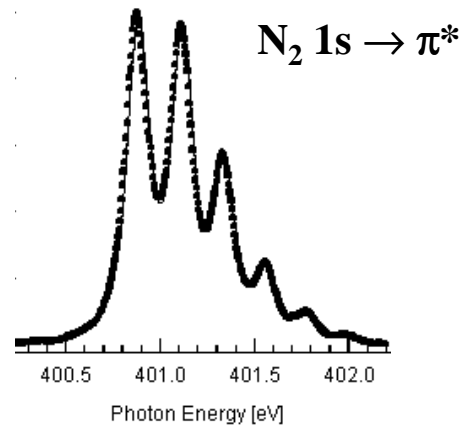
Resolved 30 nm  
1:1 features



Isolated 30 nm line

Experiments: T. Tyliszczak. H. Ade, D. Kilcoyne

Excellent, stable flux: > 1 MHz  
Excellent energy resolution: <60 meV



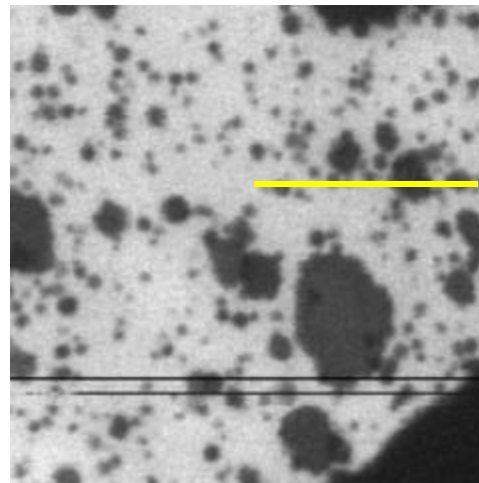
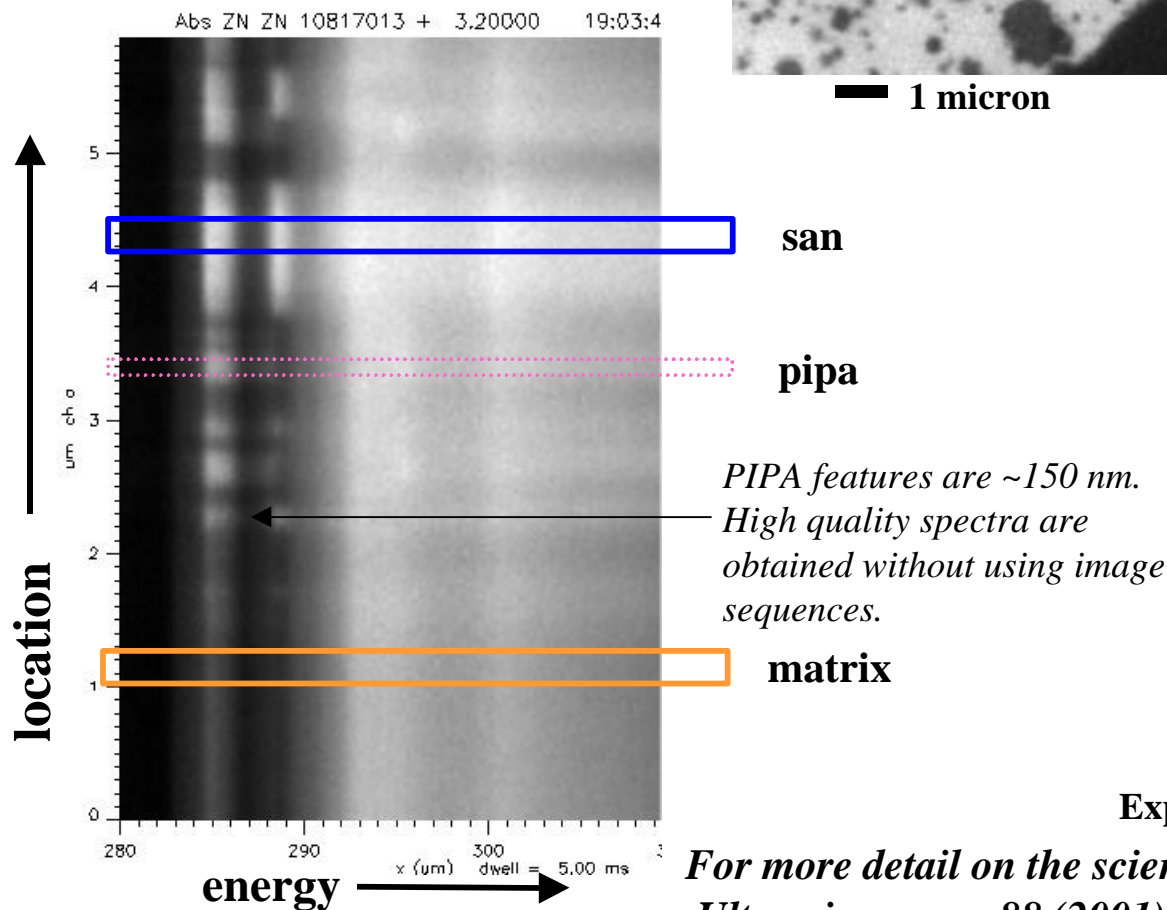
Some improvements still ahead

Supported by NSF DMR-9975694, DOE DE-FG02-98-ER45737  
Dow Chemical and NSERC

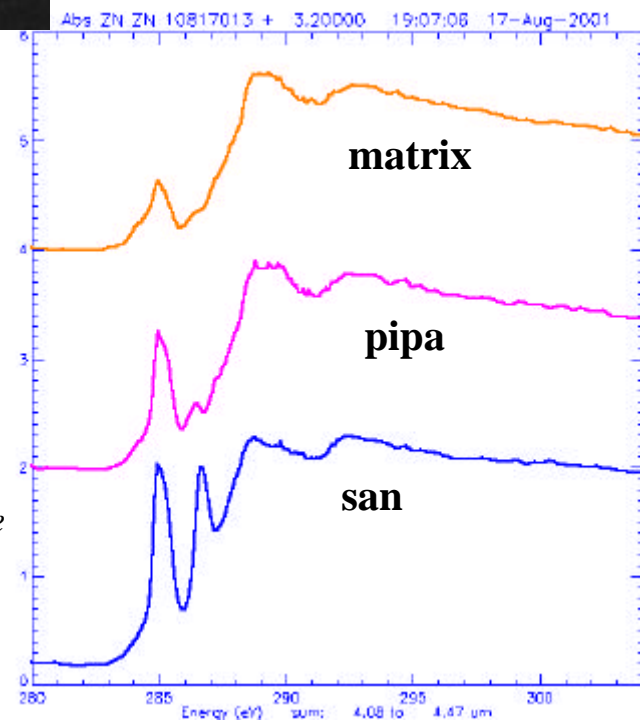
First 5.3.2 STXM Results  
ALS News Fall 2001.ppt

## 5.3.2 Spectral Linescans

- No software alignment
- Compensation for runout to better than 40 nm.
- Excellent S/N



1 micron



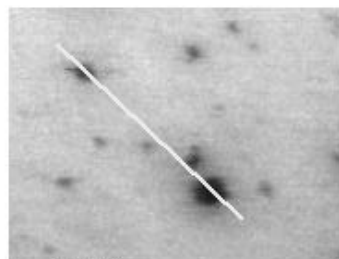
Experiments: T. Tyliczszak, A.P. Hitchcock

For more detail on the science of this sample, see  
*Ultramicroscopy* **88** (2001) 33

First 5.3.2 STXM Results  
ALS News Fall 2001.ppt

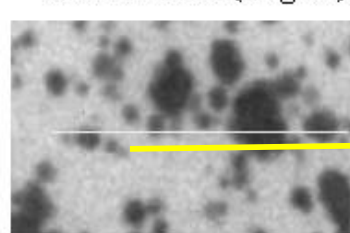
# Comparison of “Pointing Precision” of the old BL 7.0.1 STXM and the new 5.3.2 STXM

## OLD 7.0.1 STXM



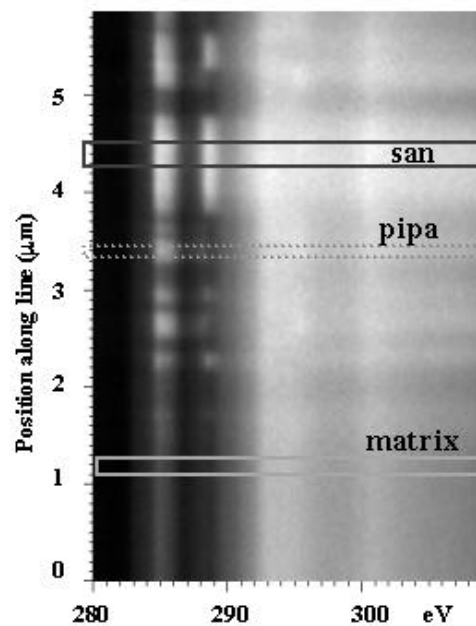
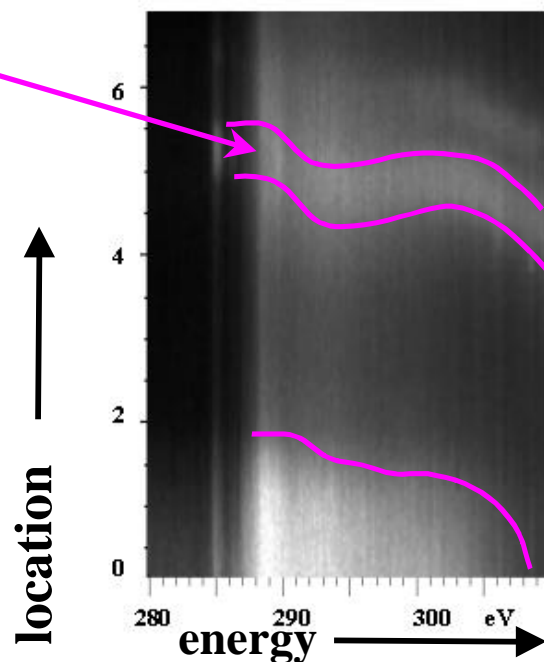
1000 nm

## 5.3.2 STXM



500 nm

The waviness is caused by drift of the X-ray spot on the sample due to mechanical limitations.



negligible waviness due to precise pointing at all photon energies

The two lower 'images' plot spectral linescans measured with each instrument.