

# Stack map analysis

A stack map is typically 2 images, one below onset of an edge, the other above the edge (continuum), or more typically, at the peak of a specific transition. This can be used for mapping an element or a specific chemical species

**Measurement:** either automatically (2E (or more) stack) or as individual images

**EXAMPLE #1** - Cu speciation (Cu(O), Cu(I), Cu(II)) from 4 images (taken from CLS stack A120819059)

## Steps to process

### 1. read in data

Read~STXM (sdf) then save as \*.ncb

Read in from other formats

into separate aXis2000 buffers, e.g. Read~Images~TXRM

If needed, generate a STACK file from individual images

Write each image: write~axis

Use text editor (WordPad) & make a stack list file

Read into Stacks~Analyze~AXIS (stack list)

Write as a single stack (from Stack\_Process widget)

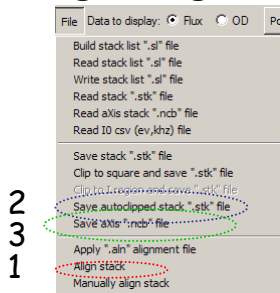
```
E:\data\folder_with_these_files\
20131008_01.axb
20131008_02.axb
```

### 2. align images

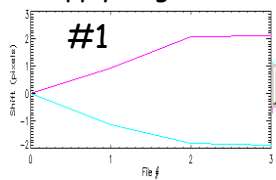
There are many ways in axis2000. Best is

stack\_analyze.sav (in c:\aXis2000 folder; run separately from aXis2000)

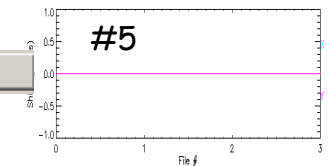
apply 'align stack' (1) until no deviations



2  
3  
1

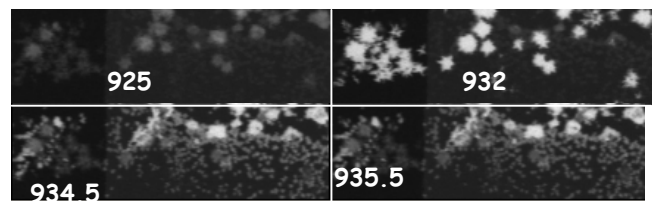
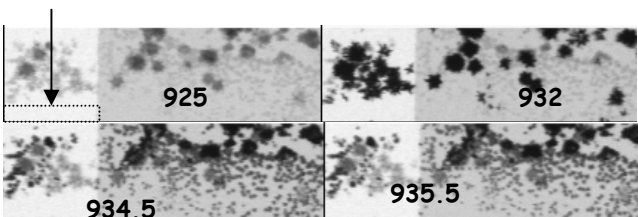


Save new alignment; go to stack\_analyze



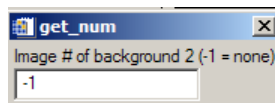
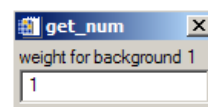
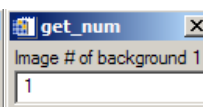
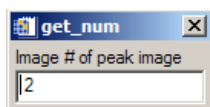
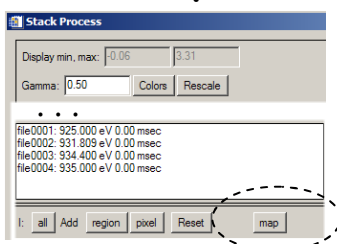
Trim stack (2) and save aligned stack (1)

### To 3. convert stack from transmission to OD

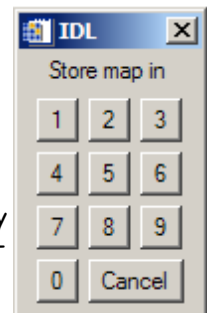


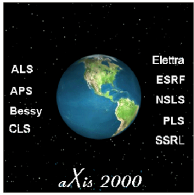
Save the OD stack

### 2. generate maps in stacks~stack\_Process

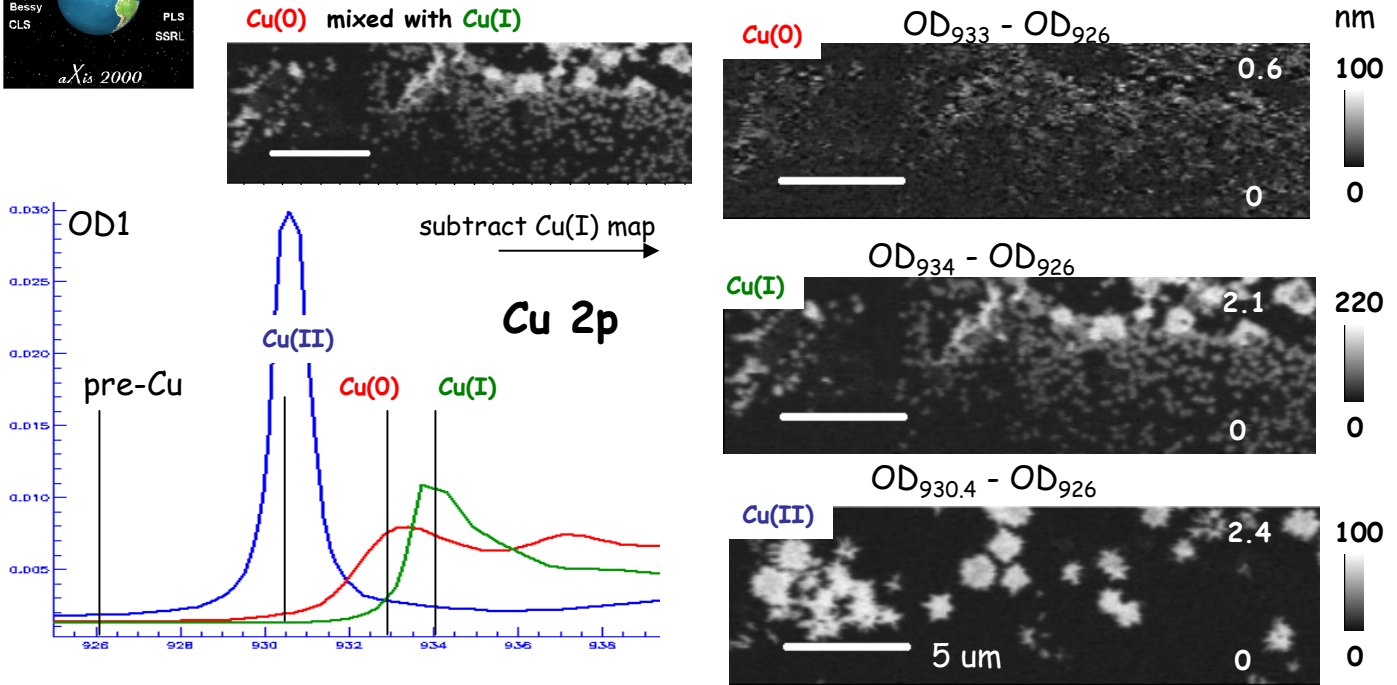


Used to remove sloping background under a peak by interpolating pre- and post-peak signals



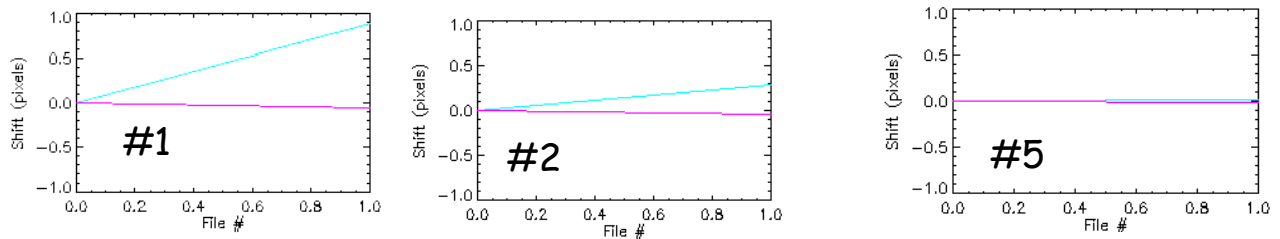


# Generating stack map from individual images (2)

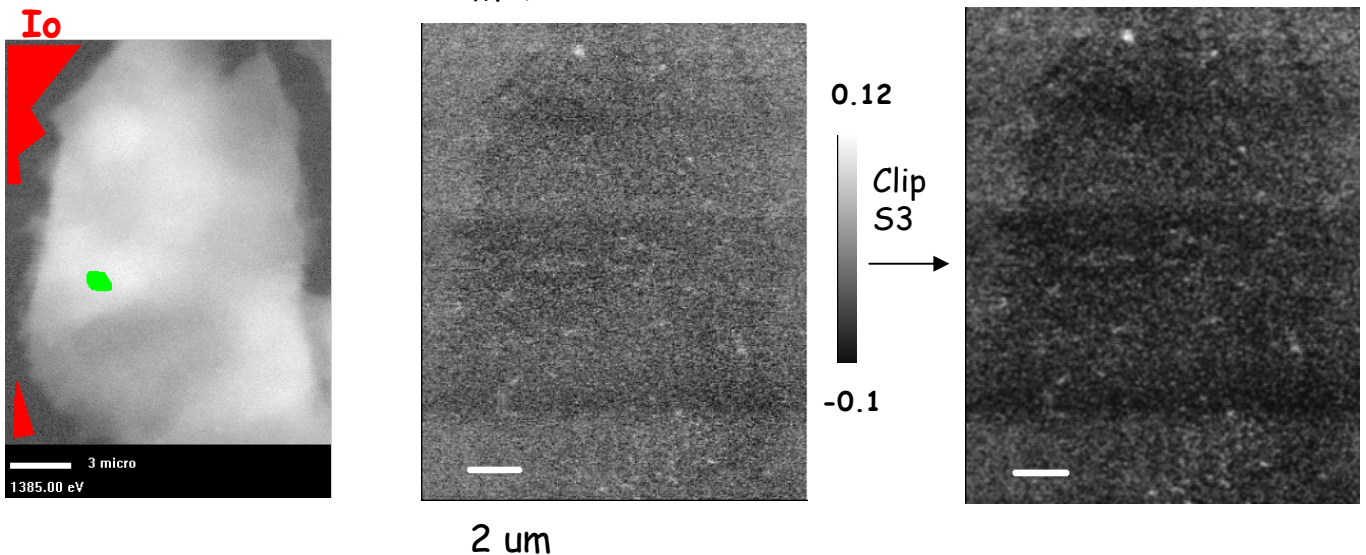


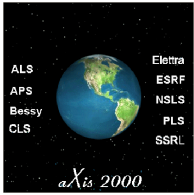
## EXAMPLE#2 : SSRF TXRM data: Se mapping at 1395 eV

### Alignment using Jacobsen (stack\_analyze.sav)



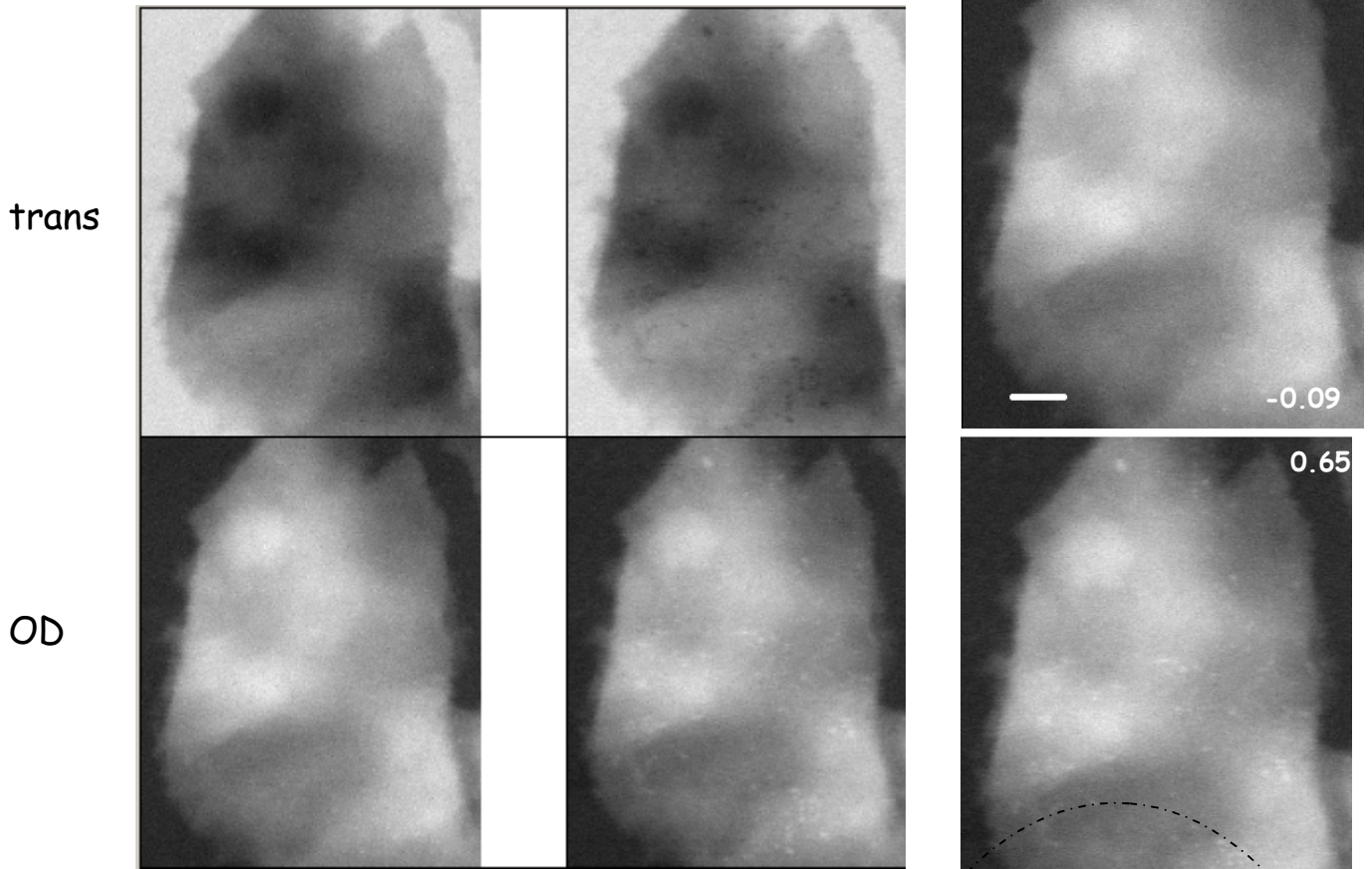
### MAP





# Generating stack map from individual images (3)

EXAMPLE from SSRF TXRM data



Alignment is VERY IMPORTANT to get valid results

