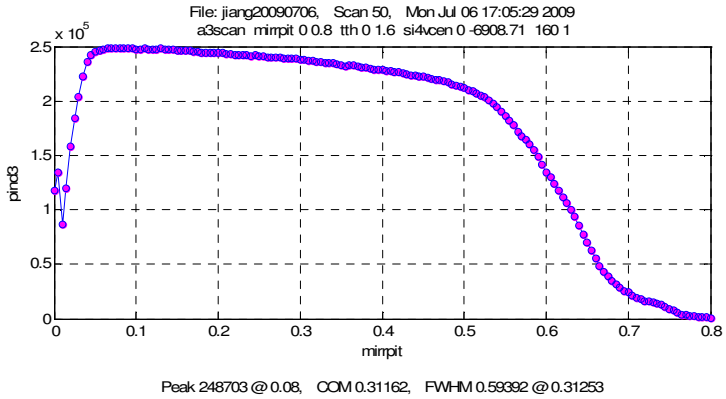
Liquid surface alignment for Langmuir trough setup at 8IDI

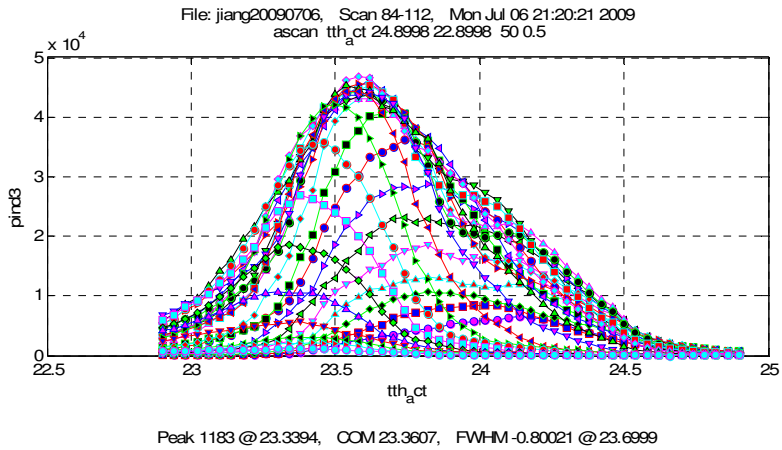
- Align APD and mirror alpha
  - Find direct beam w/o mirror on APD
  - Use two alpha angles to calibrate APD to mirror distance: 783.05 mm
  - Fix tth at a non-zero angle and rock alpha to calibrate the absolute alpha angle
  - Mirror reflectivity



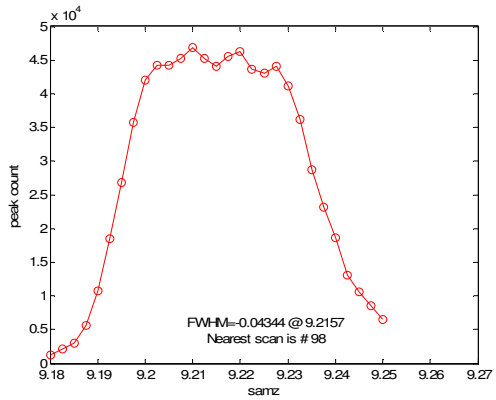
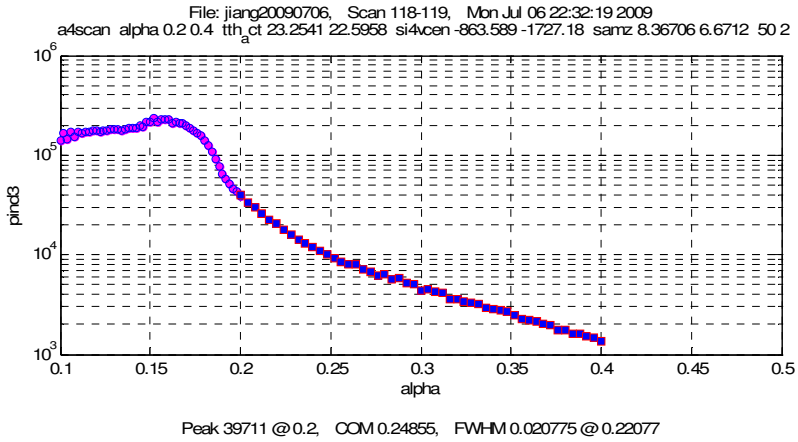
- Liquid surface alignment (find specular condition at the trough center)
  - Estimate sample-mirror and sample-tth distances using ruler.
  - Find direct beam with alpha=0.1 deg (for example)a on tth_act
  - Go to specular condition of tth_act at alpha=0.1 deg using estimated distances
  - Estimate the samz range for reflection condition between trough edges
  - At each samz position, scan tth_act: macro is saved as ~8IDIUSER/batches/June2009/samz_tth.do

```
mv_alpha 0.1;
umv tth_act 23.5
span lb_samz 9.25 9.18 29;
for (ii=0;ii<29;ii++) {
p ii;
umv samz lb_samz[ii];
do_sleep(60);
showbeam;
do_sleep(0.1);
lup tth_act 1.4 -0.6 50 0.5;
blockbeam;
}
```

    - Scans are saved as #84-112 in ~8IDIUSER/spec_data/July2009/jiang20090706



- Find peak count of each scan and plot against samz position for the scan. A matlab script ~8IDIUSER/spec_data/July2009/sctp_samz_tth.m is written to do it automatically. Center of the liquid surface is found to be at samz=9.2157 for alpha=0.1 deg.



- Find the specular condition for tth_act and calculate sample-APD distance (297.22mm) and sample-mirror distance (485.83mm).
- Reflectivity from water