| **6/29/2023** |  | | | |  |
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| Objective | Do a couple different trials today. One method will be to grow crystals at some temperature, and then slowly alter the pressure and image the impact on the crystal. The other approach is standard to see how temperature change affects crystal growth. | | | |  |
| Accomplishment/  Reflection |  | | | |  |
| Cold stage size | | 51 mm | | |  |
| Cold stage height | | +8 mm | | |  |
| Distance of detector from stage  (5-10mm) | | 5 mm | | |  |
| Probe current (70-90) | | 70 | | |  |
| Accelerating voltage (Vacc) (12-17kV) | | 12 k/v | | |  |
|  | | | | |  |
| Time | Action/observation | Temperature | Pressure (25-150 Pa, 40 most common) | Working Distance  (3 factors: focus, mag, stage height)  Error message if not from 9-11 mm | Magnifi-  cation |
| 10:50 | Setting up shop |  |  |  |  |
| 10:59 | Initiating first trial, setting temperature to -31, then will go to -38. |  |  |  |  |
| 11:02 | Going down to -38 |  |  |  |  |
| 11:09 | First crystal, seems to be growing with prismatic facet facing up but still promising for calibration. (case 1.0). **Note: crystal was still growing during imaging.** | -37.9 | 50 | 8.6 | x85 |
| 11:13 | Second image (case 1.1). Crystal seems to be flattening already, with visible roughness around prismatic facets. **Note: crystal was still growing during imaging.** | -36.9 | 50 | 8.5 | x65 |
| 11:16 | Not many changes except for more flattening overall. Roughness seems fairly similar to previous image, but will have to analyze further when comparing the two (case 1.2). | -35.3 | 50 | 8.5 | x65 |
| 11:18 | Much more roughness is now visible on the crystal as it continues to flatten. (case 1.3) | -33.6 | 50 | 8.5 | x65 |
| 11:24 | Found another promising crystal when I was about to restart the process. Extremely smooth with distinct facets (case 2.0). | -37.1 | 50 | 9.2 | x69 |
| 11:27 | Capturing another image. Roughness starting to take shape around the basal facet (case 2.1). **Note: crystal was still growing during imaging.** | -36.3 | 50 | 9.2 | x70 |
| 11:31 | Third image. More roughness forming around the edges as well (case 2.2). | -35.5 | 50 | 8.9 | x55 |
| 11:34 | Fourth image (case 2.3). | -33.7 | 50 | 8.9 | x55 |
| 11:37 | More visible roughness along the edges, but crystal is not flattening yet (case 2.4). | -32.7 | 50 | 8.9 | x55 |
| 11:40 | Signs of minimal ablation around the pyramidal facets, and the crystal seems to be starting the flattening process (case 2.5). | -30.7 | 50 | 8.9 | x55 |
| 11:43 | Final image of crystal. Visible evidence of ablation along edges, but a little shocked that there is not more (case 2.6) | -29.0 | 60 | 8.9 | x55 |
| 11:58 | Starting up again for one more trial. |  |  |  |  |
| 12:17 | Imagina third crystal of the day. Very defined edges, once again has prismatic facet facing up. (case 3.1). **Note: crystal was still growing during imaging.** | -37.5 | 50 | 9.1 | x95 |
| 12:19 | Capturing second image (case 3.2). Already signs of flattening and roughening. | -36.4 | 50 | 9.1 | x95 |
| 12:21 | Third image. Signs of ablation, with roughening and deforming around the edges, as well as overall flattening (case 3.3). | -34.6 | 50 | 9.1 | x85 |
| 12:23 | Final image, crystal has flattened a lot, and has grown linear horizontal roughness through multiple prismatic facets (case 3.4). | -32.7 | 50 | 9.1 | x85 |
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