

## Bruker D8 $2\theta - \theta$ Standard Operating Procedure (SOP)

### Starting the D8 Instrument

1. Turn on the computer (PC)
2. Switch on the chiller
3. Type in Password: "Bruker"
4. Open *Admin/D8 Tools*
5. Turn on HV (toggle left and release)
6. In *D8 Tools/X-RAY Generator*
  - a. Click *Utilities/X-RAY/X-RAY switch off circuit on*
  - b. Wait for for bright green - If it does not after 1min or 2:
    - i. Check warnings cooling water flow may not be ok
    - ii. If cooling water not ok - Try turning it on through the *D8 Tools*:
      1. *Utilities/X-Ray/TXS Manual Mode/TXS Manual Control Mode ON*
      2. *Utilities/X-Ray/TXS Manual Mode/TXS Water ON*
      3. *Utilities/X-Ray/TXS Manual Mode/TXS Manual Control Mode OFF*
      4. *Utilities/X-RAY/X-RAY switch off circuit off*
      5. *Utilities/X-RAY/X-RAY switch off circuit on*
      6. Hopefully it works now
  - c. Start Bake
    - i. Click *Utilities/X-RAY/TXSx Control/TXSx Baking ON/OFF*
    - ii. Set: A=short, Stand-by-kV = 50, Stand-by mA = 22
  - d. Takes about 2hrs
  - e. Press ok at end
7. Fill in Log book (make sure to write down filament current and vacuum)



### Running the D8 Instrument

1. Open *2D/GADDS*
2. Change Angles to easily load sample/stage - *CTRL+Shift+D*
  - a. Psi to 35° is nice
3. Move to 2-Theta = 60, Omega = 60, Psi = 0 for alignment - *CTRL+Shift+D*
4. Turn on laser and allow for remote control - *CTRL+Shift+M*
  - a. L to turn on laser
5. Use manual controller to center laser and rotation if spinning - Fiber light helps
  - a. x = 5, y = 6, z = 7
6. Turn off light and Close Doors
7. Create program or find desired programs name
8. Enter command mode - *CTRL + k*
9. Type: @"File\_name" "directory\Save\_name"
10. Press Enter - To Stop press *CTRL + c*
11. When finished press *me + Enter* to exit command mode

### Shutting Down D8 Instrument

1. Log uptime
2. Close GADDS - *File/exit* - No, Yes
3. Turn off HV
4. Turn off cooling water
5. Shutdown computer