PLD Quick start guide

1. open laser control software
2. turn on laser (physically: key to ‘|’ & switch to ‘on’ ~5 minute warm up time)
3. set laser to continuous operation (Use constant energy if running below 80% power otherwise use constant voltage)
4. open NEOCERA Pulsed Energy Deposition System software
5. Make sure gate valve is closed
6. vent chamber
   1. unlock chamber door
   2. open vent and coarse valves
   3. once door opens, close coarse valves
7. place substrate/sample
   1. home sample carrier
   2. lift & pull out carrier
   3. check for three sapphire balls
   4. put sample on, deposition side down
   5. set sample into the chamber (being careful of sapphire balls)
   6. close chamber door
8. open motor control
   1. home target carousel
   2. place target in T1 spot
   3. home substrate ensure shutter is closed for pre-ablation & heating steps
9. laser software
   1. verify continuous operation is selected
   2. set # of pulses
10. NEOCERA routine editor
    1. always write comments to describe the routine
    2. use step notes to describe what operator should do as that step runs
    3. 4 options: hold, heat, ablate, pressure
       1. hold: if you need to manually do anything
          1. set rotation of substrate
          2. set mass flow rates
          3. change turbo pump or shutter system settings
       2. pressure:
          1. set max & min pressure that you need
       3. heat:
          1. ramp rate: time and temperature
          2. will need to manually lower heater
       4. ablate:
          1. set rastering, target rotation, carousel rotation, # pulses, frequency
          2. include a pre-ablation step (with the shutter closed) to clean the target
11. option: looping routine editor
    1. add in routines in order desired (e.g. pressure, heat, ablate 1, ablate 2) & set loops/repeats
12. **to run a routine**
    1. go to the control panel
    2. home all motors (3rd tab)
    3. put heater down
    4. make sure chamber door is closed
    5. open gate valve( make sure that you are not sending the turbo to atmosphere when it is running)
    6. make sure vents are closed (collection of five knobs & collection of two knobs)
    7. save pump down file in Phil’s folder
13. **when finished with the system**
    1. close gate valve
    2. raise heater
    3. open chamber door
    4. remove samples, targets
    5. close vent valves
    6. close door
    7. manual control-> Turbo
    8. open gate valve
    9. pump down chamber at 1000 Hz, about 10 minutes
    10. turn off laser (key & switch)