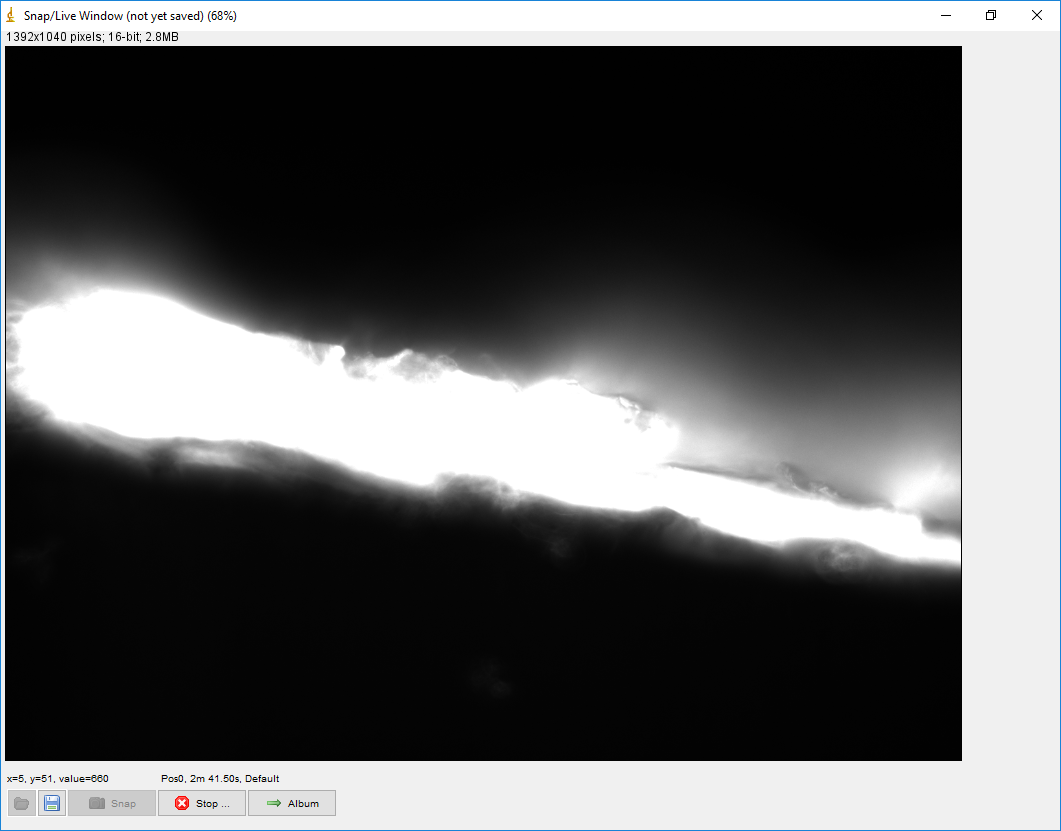
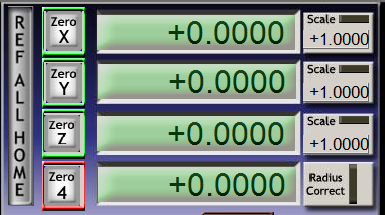
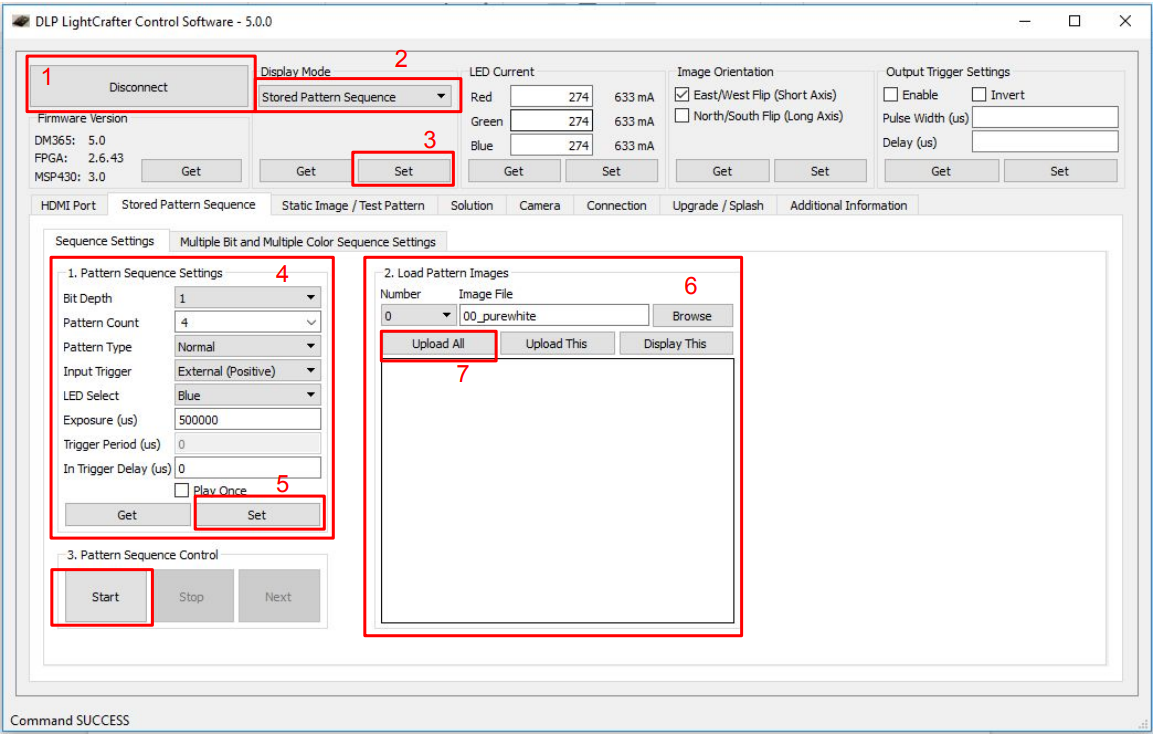
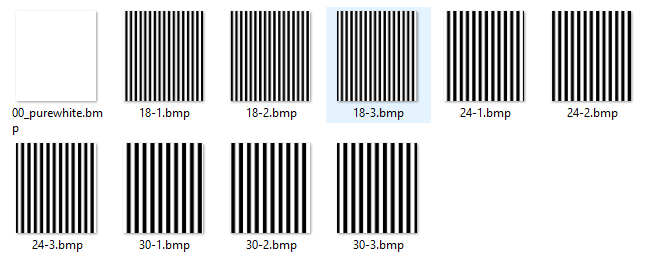
This protocol covers the steps to acquire a set of images. Detailed setup instructions of each software are in separate protocols. This protocol assumes that all setups, including the alignment of milling and imaging planes, have been finished.

1. Mount the sample
2. Power on and connect all hardware: camera, mill, DLP projector, Arduino
3. If not yet done, upload required firmware (AOTFcontroller) to Arduino (sketch available from <https://micro-manager.org/wiki/Arduino>)  
   
4. Open all required software: Mach3 (or other CNC software), DLP LightCrafter Control Software, MicroManager
5. In LightCrafter software, change to desired test pattern for focusing the camera (eg. solid white)  
   
6. In MicroManager, open a live view window  
   
7. In CNC software, jog the stage in X and Y direction to find an edge of the sample. Confirm in the Live window
8. Change slow jog rate to a small number (eg. 5) to lower jogging speed, and carefully jog up and down to focus the camera (Probably using PgUp and PgDn buttons)
9. Slowly jog in X and Y directions to find desired imaging position
10. Zero/Home all three coordinates  
      
    
11. Load G Code for the milling cycles. Don’t click start  
    
12. In LightCrafter software, set up sequence and load patterns. Pattern count is the number of pattern files used. For example, if you are using the 18ppx pattern, you would select 4 (3 pattern sub-images + 1 bright field image). Note that the order the patterns is based off of their file names. We recommend that you name the patterns files so that the files will always be loaded in a known order. An example is attached below. You can double check the order by clicking “Number” in the “2. Load Pattern Images” section.   
      
    
13. In MicroManager, open the controlling BeanShell script and change the acquisition parameters (eg. depth, number of patterns, file saving directory). Note that numPatterns in the Beanshell script refers to number of different patterns used, not number of pattern files, which is the case in the LightCrafter control software. For example, if you are using both 18ppx and 24ppx patterns, you would enter 2 in the Beanshell script and select 7 (2 x 3 pattern files + 1 bright field file) in the LightCrafter control software.  
      
    
14. Click start in LightCrafter
15. Do a last check of everything
16. Click run in BeanShell
17. Watch for a few cycles to make sure everything is running smoothly
18. The folders containing the acquired images will be named “Pos#”. The number depends on the number of patterns used and the order of the pattern images in the LightCrafter software. In this example below, 3 different patterns were used (18ppx, 24ppx, and 30ppx). In the LightCrafter software, 10 total pattern images were uploaded, and they were in the order of bright field → 18ppx → 24ppx → 30ppx. So the 4 resulting folders consequently contain images in this order.   
    