EBL1
(Elionix EBeam Lithography System)

Load Sample/Beam Setup/Exposure Operating Procedure

LOAD SAMPLE

1. START your reservation in the Kiosk section of the iLab website.
2. Select **Exchange** position.
3. Ensure **ISO Valve** is closed. (The icon should NOT be orange)
4. Toggle red **Vent/Evac** switch to **Vent** and wait for solid red light signal.
5. Unlock chamber.
6. Pull **Exchange Arm** back slowly to open stage.
7. Place wafer/sample holder in correct position using. (See Appendix 1)
8. Set wafer/sample on stage assembly.
9. Set holder spring.
10. Close stage and lock chamber.
11. Toggle red **Vent/Evac** switch to **Evac**.
12. Wait for LED to turn solid green. (5.0 e-0 Pascal)
13. Toggle red **Gate Valve** switch to **Open** position. (Verify by viewing laser through viewport.)
14. Unlock **Exchange Arm**. (Turn Left)
15. Push **Exchange Arm** in slowly until it stops.
16. Unscrew **Exchange Arm**. (Turn Left)
17. Pull back **Exchange Arm**, verify that it is disconnected from the stage.
18. Push **Exchange Arm** forward lightly to ensure stage is completely loaded into position.
19. Pull back **Exchange Arm** slowly.
20. Lock **Exchange Arm** (Turn Right)
21. Toggle red **Gate Valve** switch to **Close**.

BEAM SETUP

22. Select the **Isolation Valve** icon to **open** the isolation valve (Icon should turn orange when valve is open)
23. Select **Beam** menu, then the **Beam Memory**.
24. Select **Recall Recipe**.
25. Select the desired **Recipe**.
26. Close the **Beam Memory** window.
27. Select Faraday Cup icon (**FC**).

28. Select the **Beam Blank** icon to Unblank Beam.
29. Select **TV or Rapid** Scan Mode.
30. Change magnification to **100X** in order to locate Faraday Cup.
31. Center Faraday Cup using **Stage Center** option.
32. Set magnification to **1,000X**.
33. Select the **Spot** icon.
34. Use the Beam Current Meter on Control Panel to measure Beam I (**Zero Check Off**).
35. Use the **Lens Alignment Left** and **Right Arrows** to adjust the beam current.
36. Turn Meter off after verification (**Zero Check ON**).
37. Select the **Beam Blank** icon to Blank Beam.
38. Select **Reference** (Gold coated reference sample for focus check).
39. Allow stage to move to position.
40. Select **Beam Blank** icon to Unblank Beam.
41. Select **TV or Rapid** Scan Mode.
42. Set magnification to **~ 100X** to find scratch mark on gold reference sample.
43. Increase magnification up to **100000X – 150000X**.
44. Right click on mouse to Select **Focus, Stigmate, Contrast, Brightness** to obtain optimal image.
45. Select the **Beam Blank** icon to Blank Beam.
46. Perform **Z Height Adjustment**.
47. Select **Stage Memory** icon.
48. Enter chip position coordinates and select the **Move** icon.
49. Under the **Position** menu adjust Z height value until the laser display unit on the control rack reads <.00003
50. Note this Z Height value and enter it into the **Z Preset** window under the **Set Options** menu at **Step 62**.

EXPOSURE

If Overlay is required, refer to EBL Overlay Procedure document.
If Field Correction is required, refer to the EBL Field Correction document

51. Transfer CAD files to the CAD PC via memory stick, CD, or DVD by inserting into USB port or CD/DVD drive on the **CAD PC**.
52. Be sure to select your desired Field Size and Dot Density in the WECA software PRIOR to opening your Con File.
53. Under the File menu select "**Open an existing CON file**".
54. Select desired file.
55. Select **EXP** icon.
56. Select **OK**.

57. Create new schedule file or load previously created file per the **EBL CAD Procedures** document.
58. Be sure to enter the **Z Height value** obtained at **step 53** into the **Z Preset** window under the **Set Options** menu, and choose **Preset ON**.
59. Select **Exposure** icon.
60. Select **Exposure** icon in the Exp. Grap. menu.
61. **If** Field Correction is needed (ie. Stitching) select the **Field Correction** icon, and follow Field Correction Procedure document.
62. Select **Exposure** icon in the Exposure menu.

UNLOAD SAMPLE

63. Toggle the **Control Key** twice to switch to **SEM PC**.
64. Select the **SEM** Icon.
65. Select the **Isolation Valve** icon to **close** the isolation valve.
66. Select the **Exchange** icon.
67. Toggle red **Vent/Evac** switch **to Evac**.
68. Wait for LED to turn solid green. (5.0 e-0 Pascal)
69. Toggle **Gate Valve** switch to **Open** position.
70. Unlock **Exchange Arm**. (Turn Left)
71. Push **Exchange Arm** forward slowly until it stops.
72. Screw **Exchange Arm** into the stage assembly until it stops. (Turn Right)
73. Unscrew **Exchange Arm** ½ turn.
74. Pull **Exchange Arm** back slowly until it stops.
75. Lock **Exchange Arm**. (Turn Right)
76. Toggle **Gate Valve** switch to **Close** position.
77. Toggle red **Vent/Evac** switch to **Vent** position.
78. **Unlock** door.
79. Pull **Exchange Arm** back to unload stage.
80. **Unload** Sample.
81. Push **Exchange Arm** back in to reload stage.
82. **Lock door**.
83. FINISH your reservation in the Kiosk section of the iLab website.