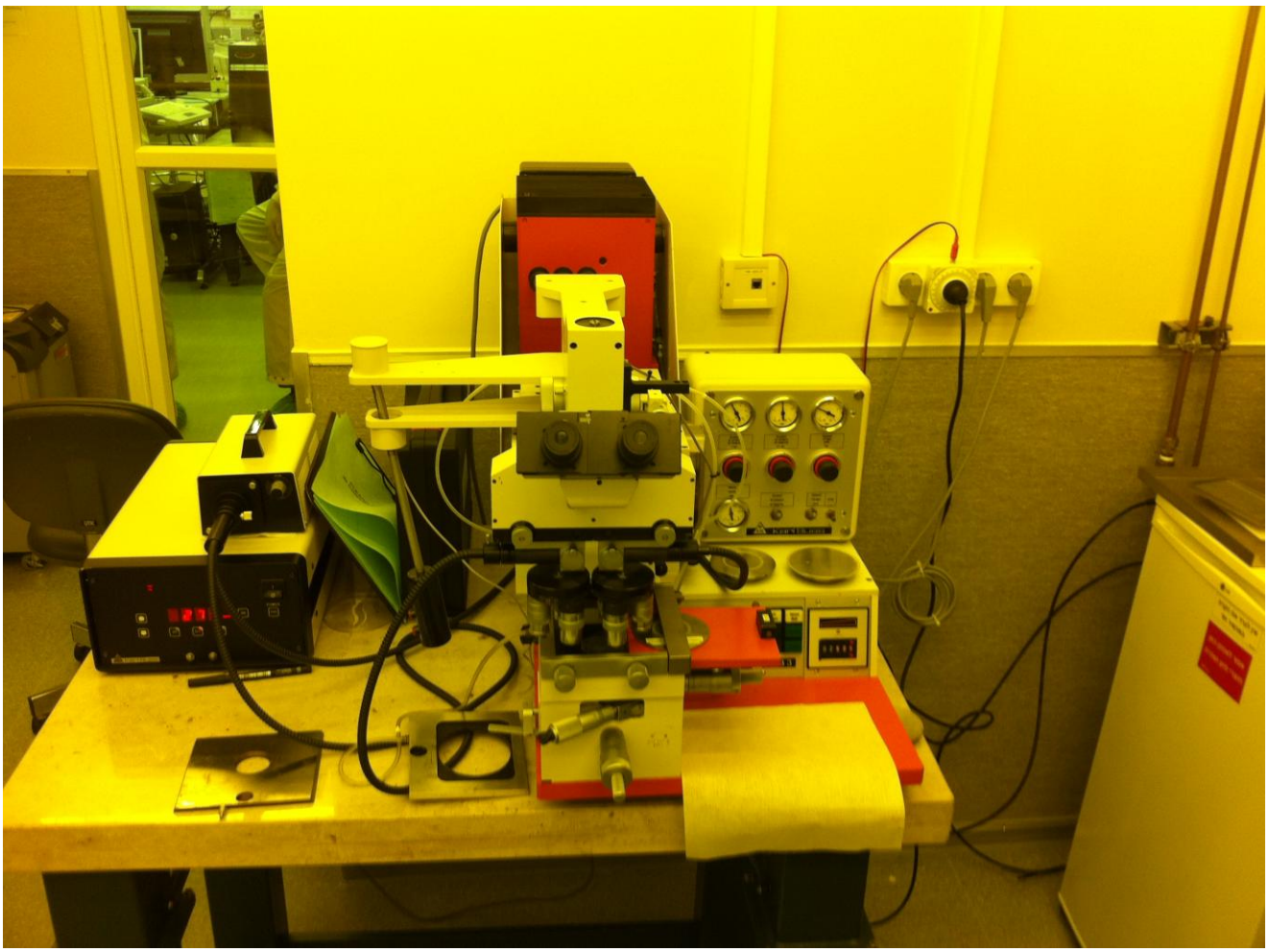
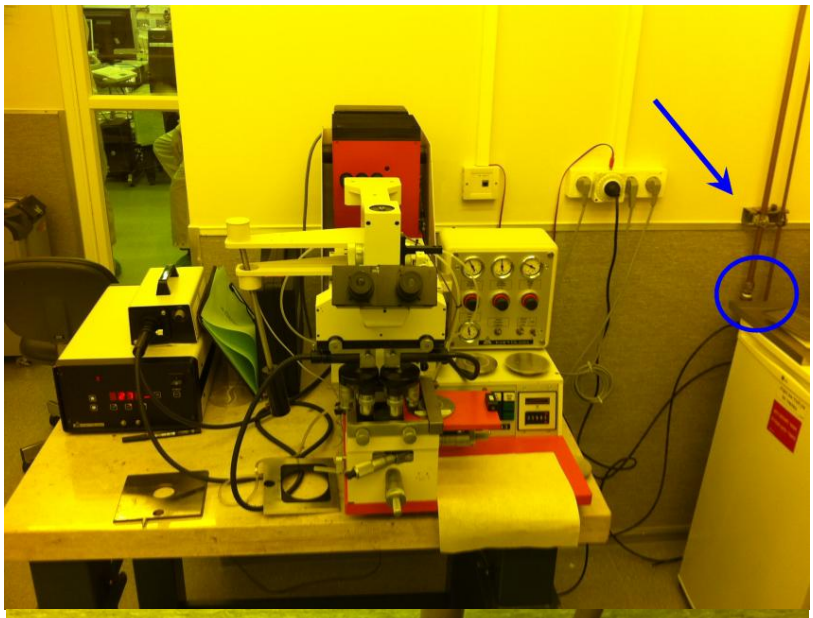
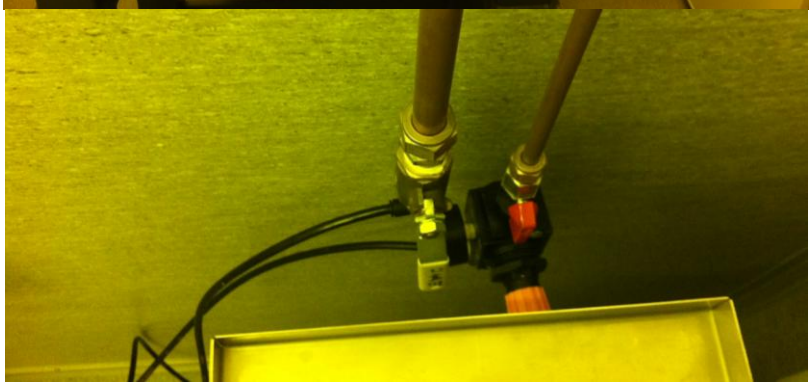
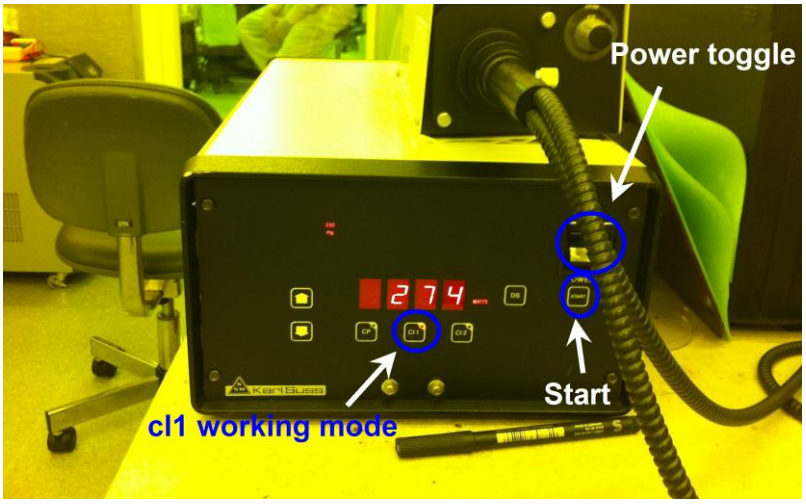
MJB-3 Mask Aligner

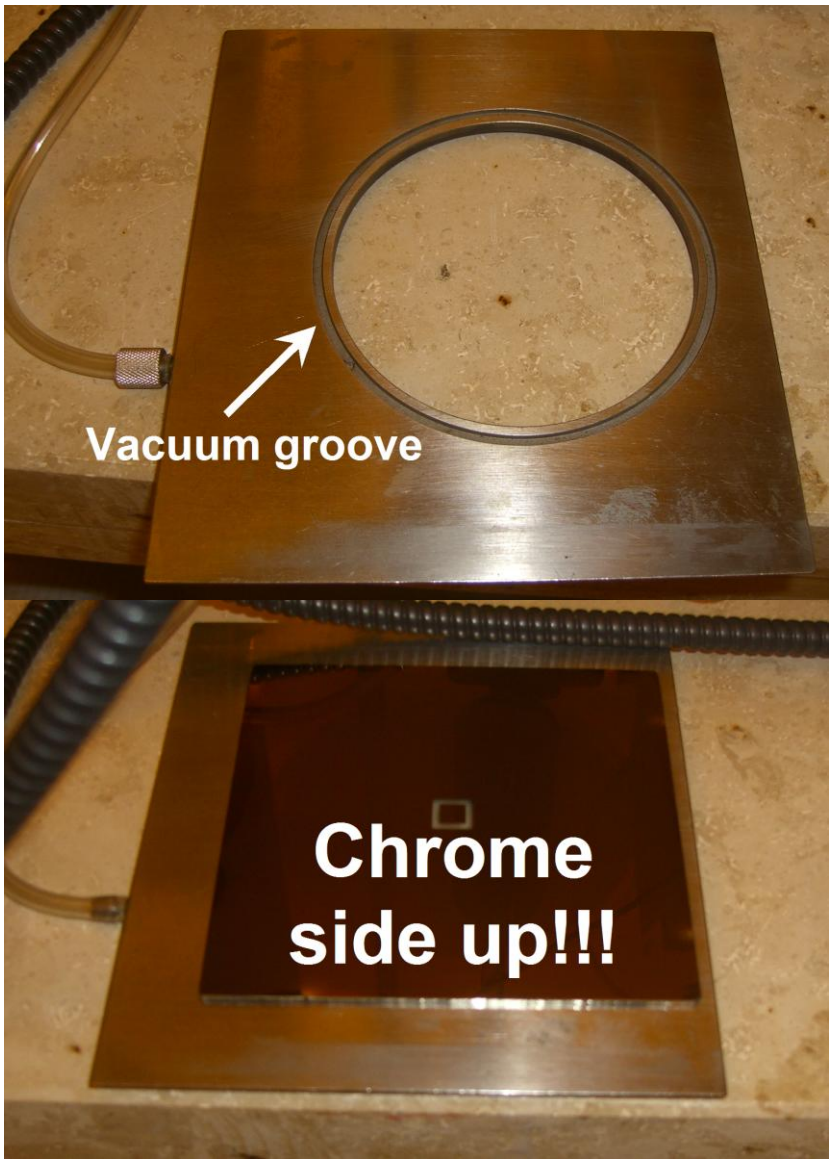


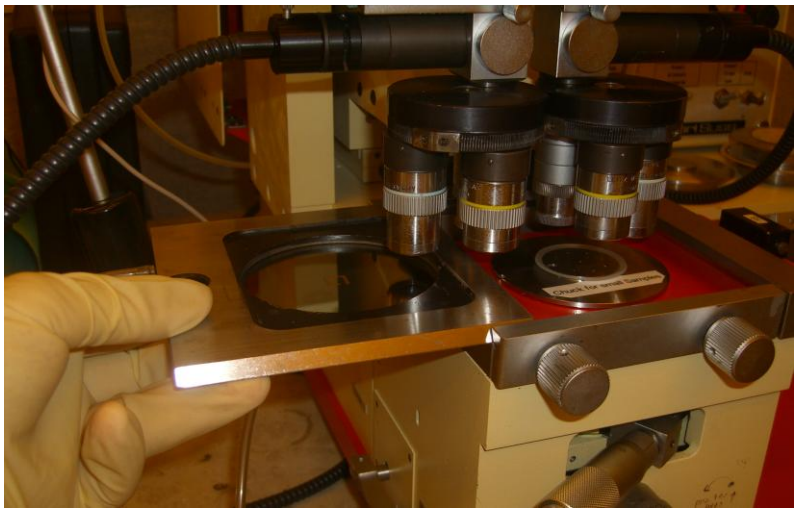
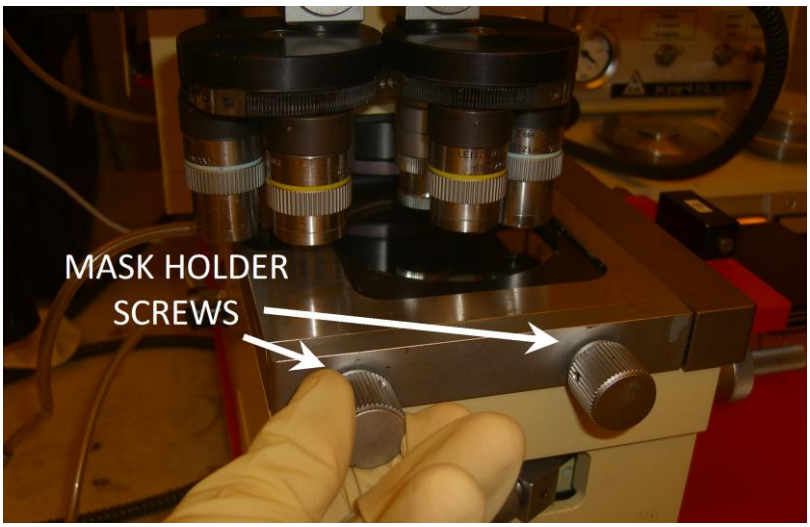
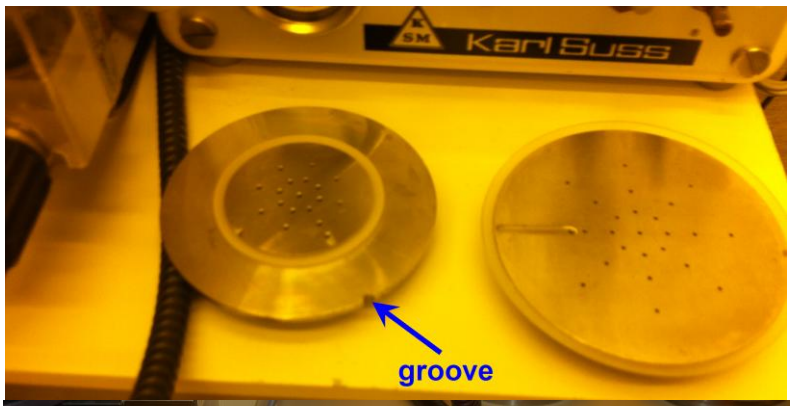
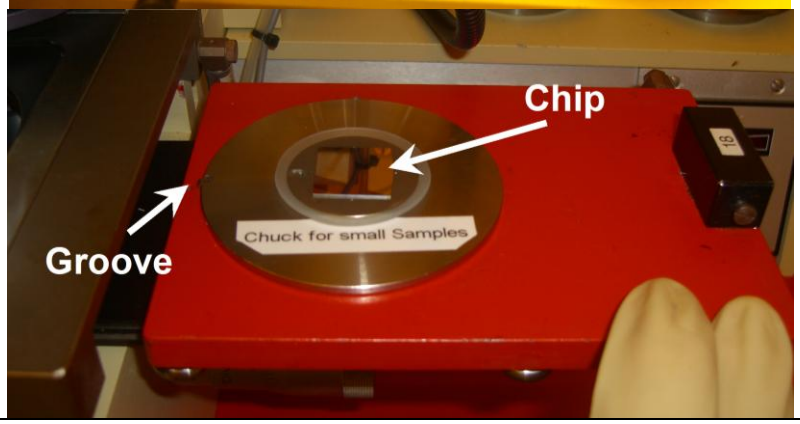
I. Power Up Sequence

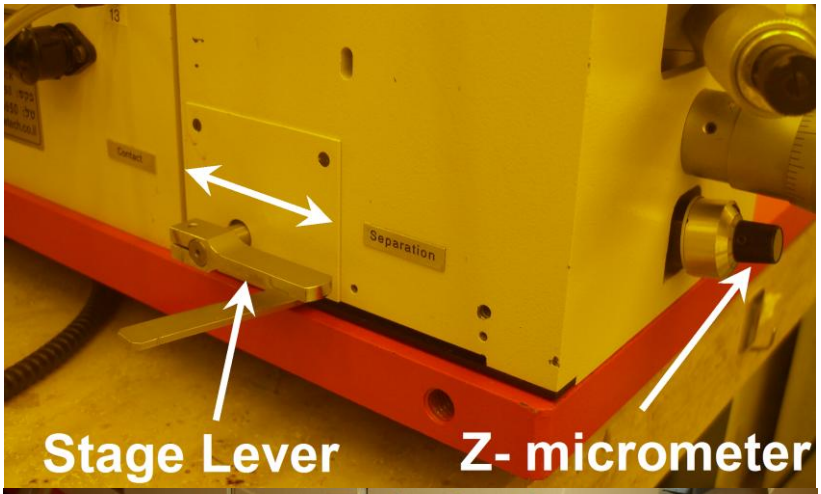
1	**LOG IN.** Turn on Nitrogen & compressed air lines on the back wall.	 
2	Turn on the vacuum pump.	

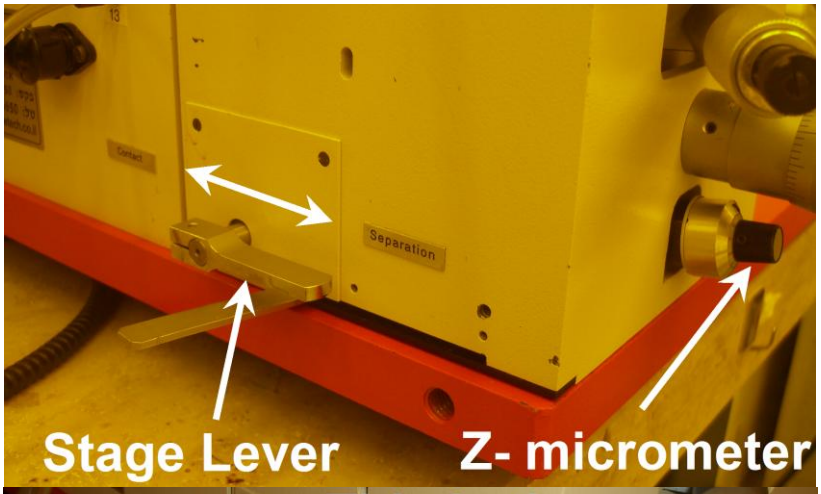
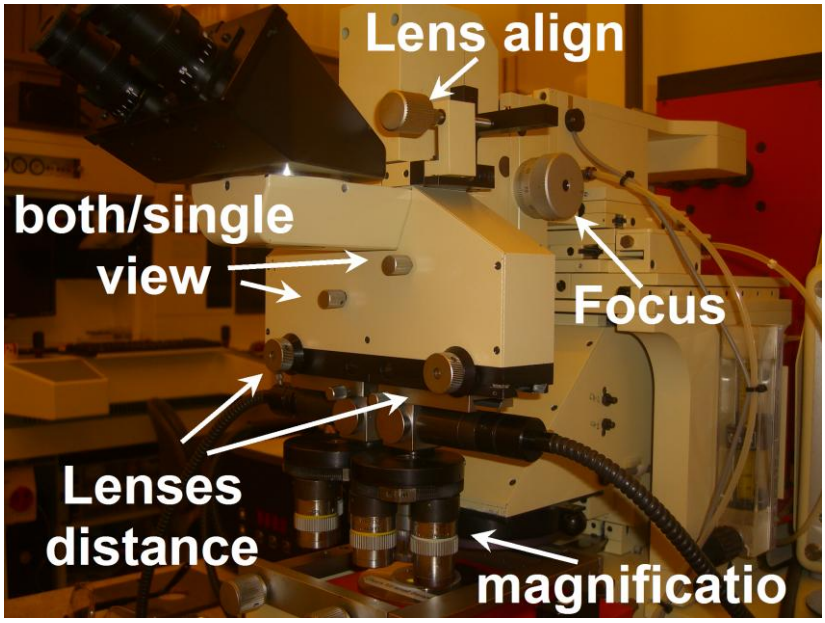
		
3	Flip the COMPRESSED AIR toggle on (up) • Compressed air is used to control the Karl Suss via pneumatics. Flip the NITROGEN toggle on (up) • The nitrogen gas is used to cool the UV lamp.	
4	Turn on the lamp source toggle switch and press START on the lamp source.	
5	Turn on the Karl Suss via pressing the POWER button (it will light). Turn on the microscope light (at the back of the microscope light source).	

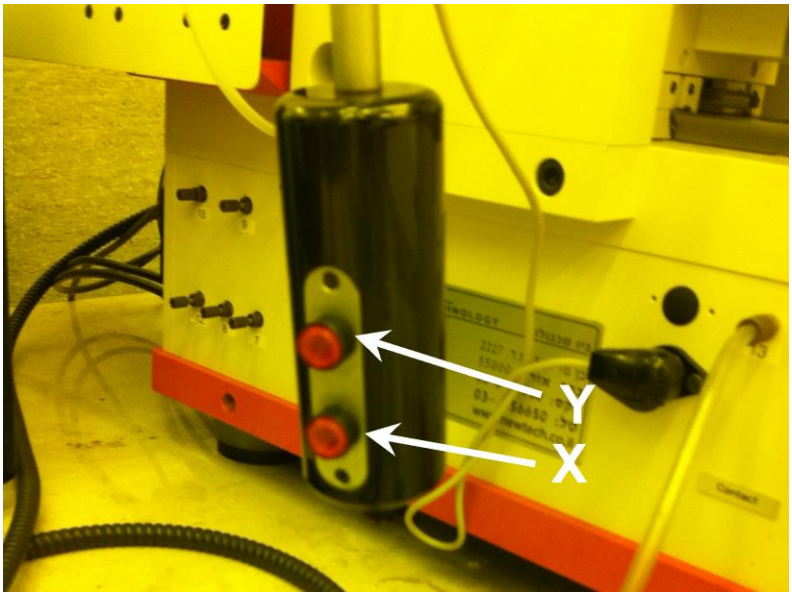
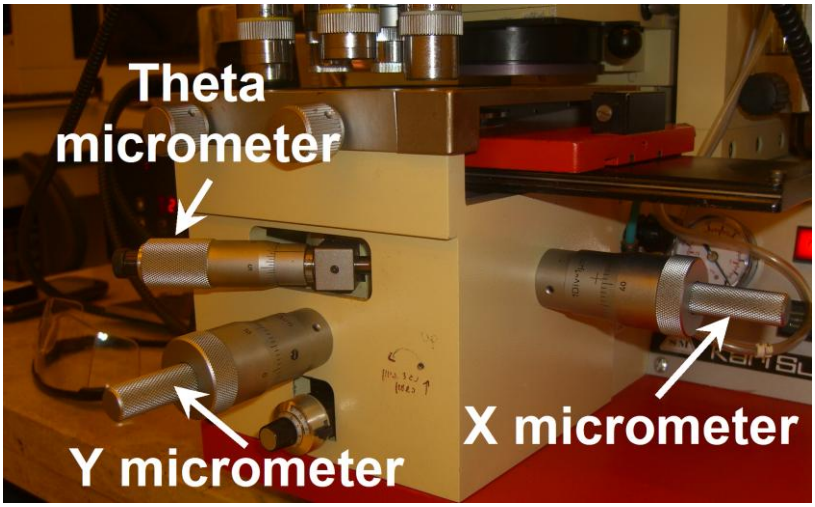
II. Work Sequence

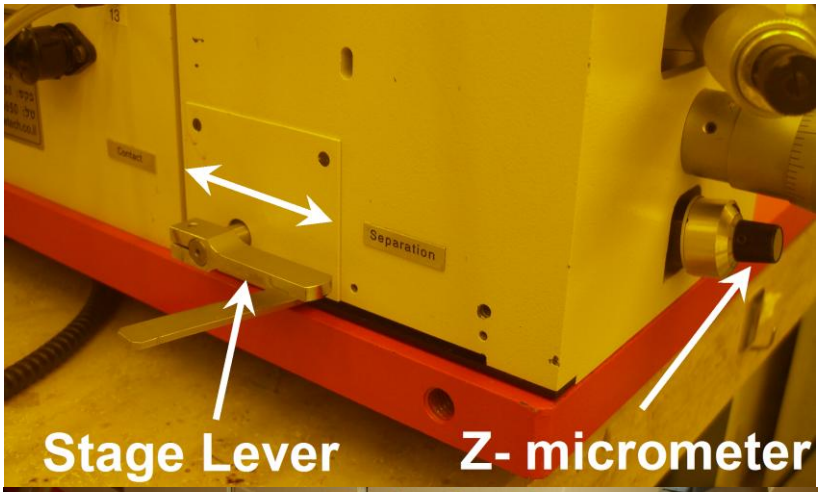
6	**<u>Load the mask in to the mask holder:</u>** Ensure your mask is clean. The mask holder should be placed face up on the table (you should see the vacuum groove) Place your mask (chrome side up) on the mask holder. You can play with the location of the mask on the holder (to ensure an exposure of the desired area) as long as your mask is not out of the mask holder's bounds and covering the vacuum grooves.	
7	Press VACUUM MASK button (it will light) to establish a vacuum between your mask and the mask holder.	

8	Slide the Mask Holder face down (!) onto the Karl Suss. • Keep a finger on the mask in case the vacuum fails.	
9	Secure the Mask Holder by tightening MASK HOLDER SCREWS.	
10	Select the proper VACUUM CHUCK for your sample and place it on the slider (mind the groove!). Center your sample on the vacuum chuck. • Check that your sample covers all the vacuum holes. Slide the VACUUM CHUCK into the Karl Suss.	 

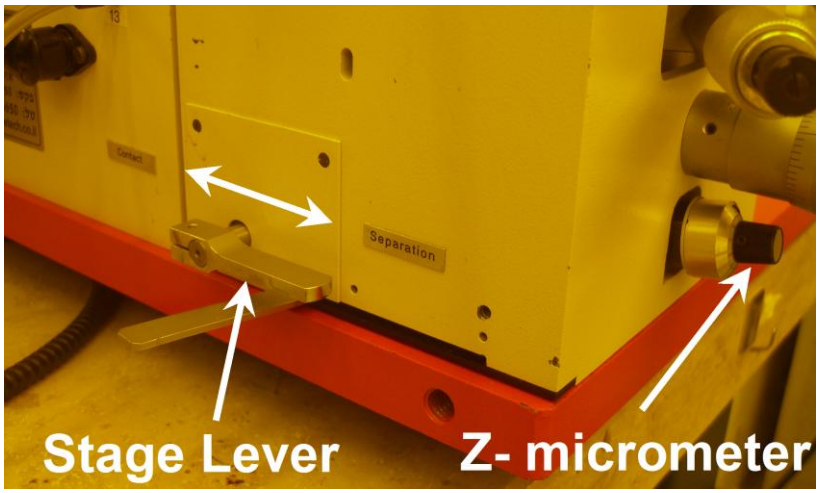
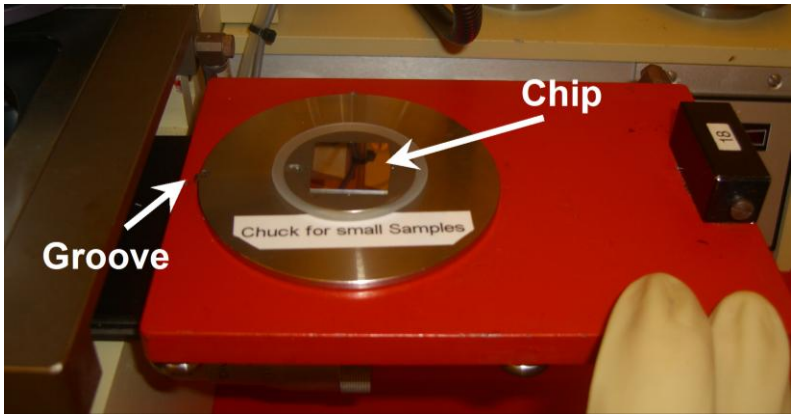
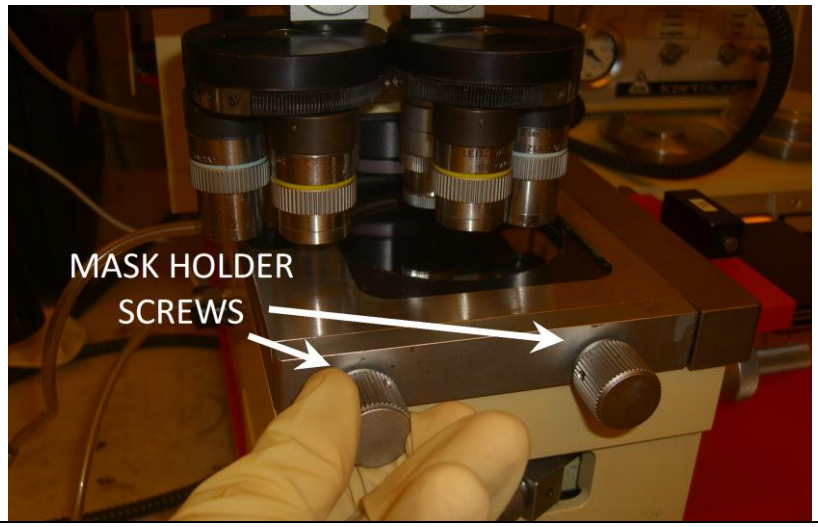
11	Select exposure type: The 3 types are: -Soft contact (2 & 3 will light). -Standard contact (2 will light) -Vacuum contact (1 & 4 will light just as on the picture)	
12	**Bring wafer in contact:** Make sure to leave a safety gap (between the mask and the wafer) by turning the Z-micrometer 4 times clockwise. Bring the wafer in to contact with the mask using the STAGE LEVER. Bring the STAGE LEVER to contact position. If you feel resistance STOP! And turn the Z- micrometer few more times. When the stage level is at the contact position, push the SEPARATION LEVER from yourself (all the way to the back), start turning the Z-micrometer counter clockwise, until the SEPARATION LEVER JUMPS (or look for fringes using the microscope for small samples). If you feel resistance STOP! Repeat the same procedure while looking via the microscope to see what's wrong.	 

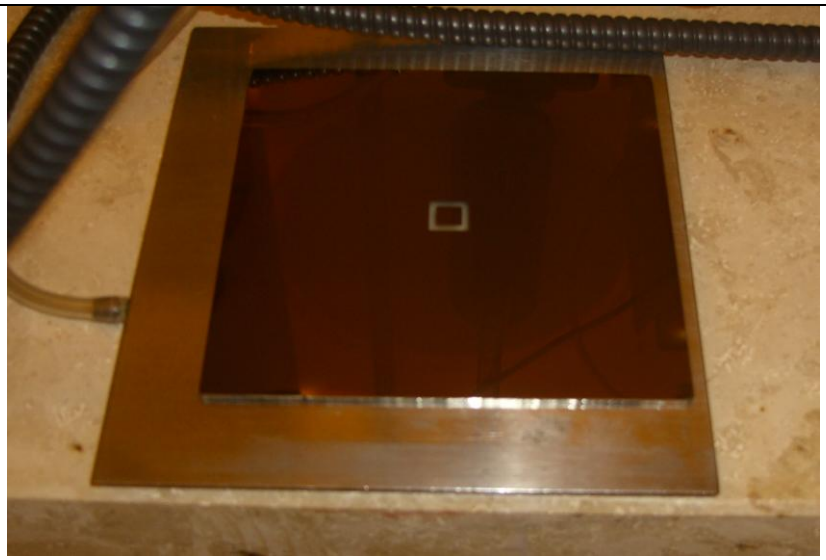
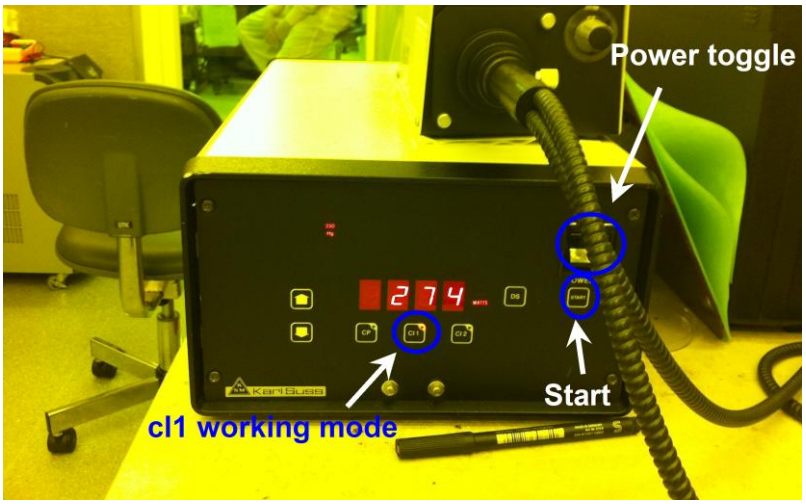
13	**Align your sample:** Pull the SEPARATION LEVER towards yourself to separate the wafer from the mask. Turn the Z-micrometer clockwise by 1-2 turns (or until you can move the sample but still in focus).	 
14	Adjust the microscope magnification lenses, focus and other knobs to view your sample.	

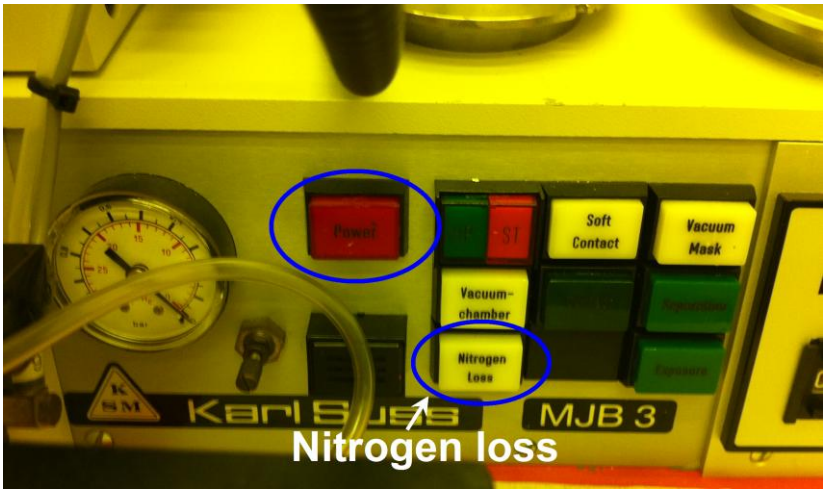
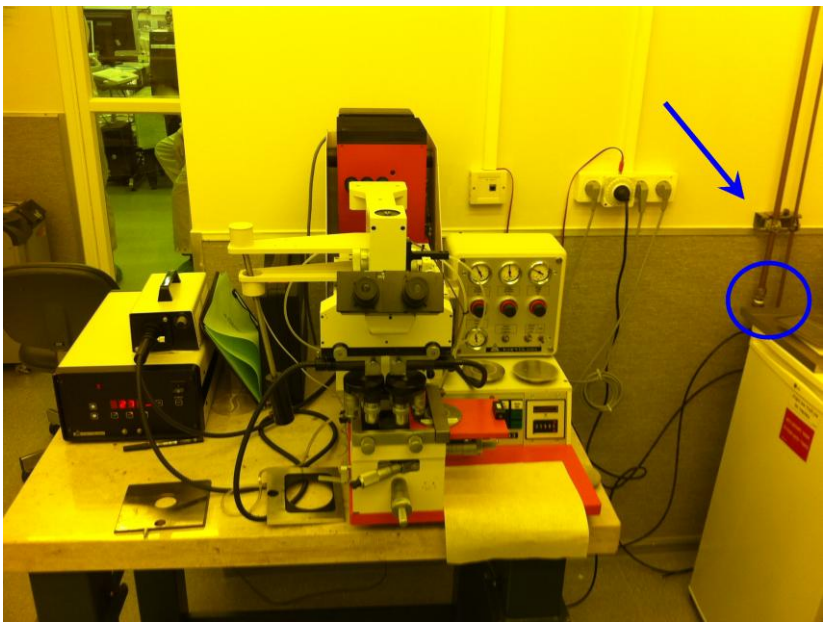
15	Use the joystic to change your viewing field. - The top button allows movement in the Y direction. - The top button allows movement in the X direction. - Press both buttons for free movement.	
16	Move your sample using the X, Y and theta micrometers to align your wafer to your mask.	

17	Once aligned, move the SEPERATION LEVEL back into the contact position. Adjust the Z-micrometer up (counter-clockwise) until the SEPARATION LEVEL jumps.	 
18	**Expose the resist:** Set the timer to desired exposure. Select the units (seconds, minutes, hours) using the buttons. The black digits are the major units. The red digits are the tens of the major units. When ready press the EXPOSURE button, to expose your resist. **DO NOT LOOK AT THE UV!!!**	

III. Power Down Sequence

19	Use the STAGE LEVER to lower the wafer from the mask. Bring the STAGE LEVER to separation position.	
20	Slide out the vacuum chuck and remove your sample.	
21	**<u>Remove mask:</u>** -Unscrew mask holder screws. -Place hands underneath mask holder. -Carefully slide out the mask holder and place it (mask side up) on the table.	

		
22	Press the vacuum mask button and remove your mask. **<u>Turn off the microscope light.</u>**	
23	**If you want to turn off the machine completely, turn off the lamp power supply (using the power toggle),** **wait 10 minutes** **and execute the next steps**	

24	Press the power button on the Karl Suss. The Karl Suss has a nitrogen loss indicator. The nitrogen cools down the UV lamp. It is essential to cool the lamp and to monitor the nitrogen flow via the Karl Suss nitrogen loss indicator	
25	Flip the nitrogen and the air toggles off (down)	
26	Close Nitrogen and compress air lines at the wall.	

27	Turn off the vacuum pump.