

Glow Discharge Protocol

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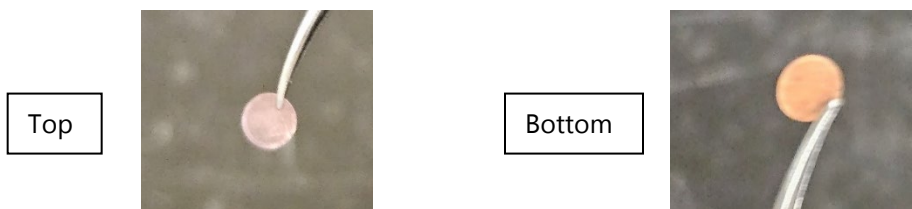
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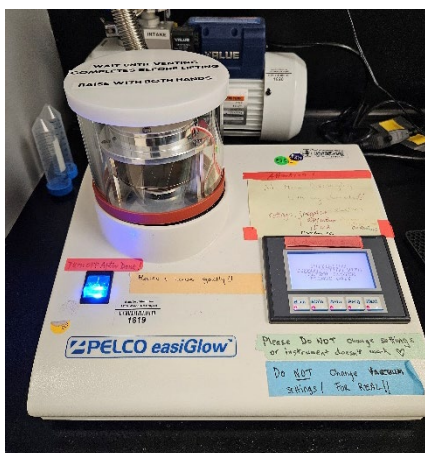
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About Grids

Grids have a topside and bottom. The box that the grids come in usually says which way the tops face. For Quantifoil grids, there is a carbon coating on the topside, which gives it a darker appearance. You can use this as a guide. Always place grids topside up.



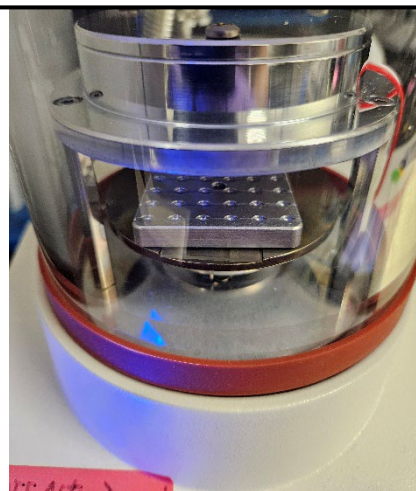
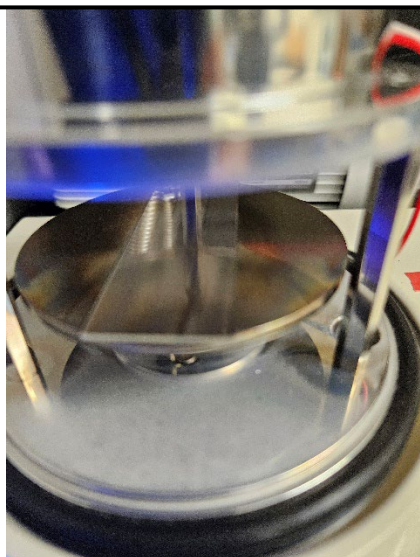
Glow Discharge



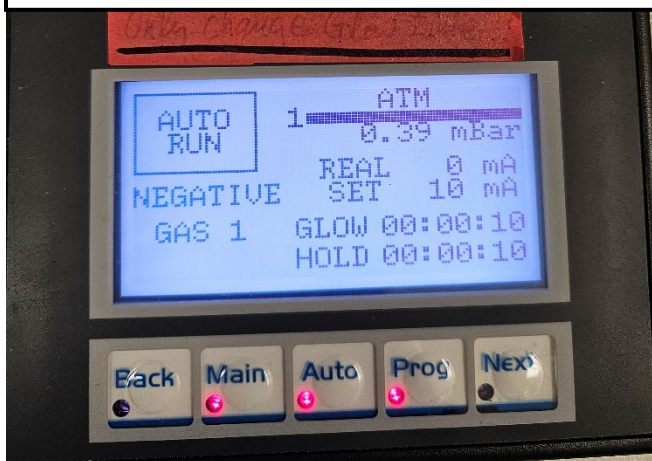
The glow discharger is located near the fume hood in Fairchild and on the bench in ChemH. The power switch is blue and located near the middle left. Use both hands when removing or replacing the glass jar, using a straight, vertical motion.



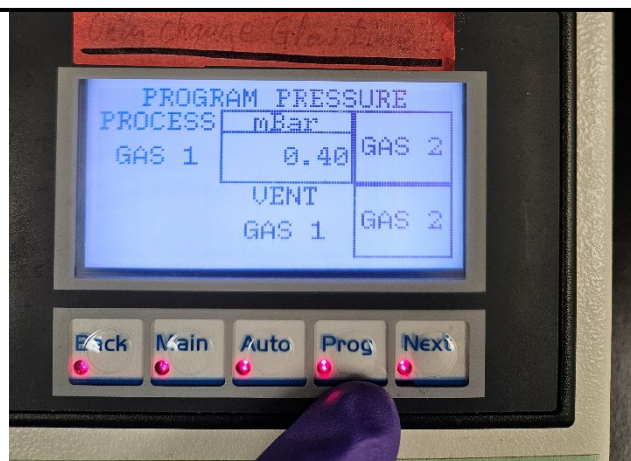
1. Place the grid(s) within the divots on the grid holder block.
2. With the glow discharger turned on and the glass jar removed, place the grid holder block on top of the stage. Note that there should be a glass cover slip between the stage and holder block to help dissipate charge. Replace the jar.



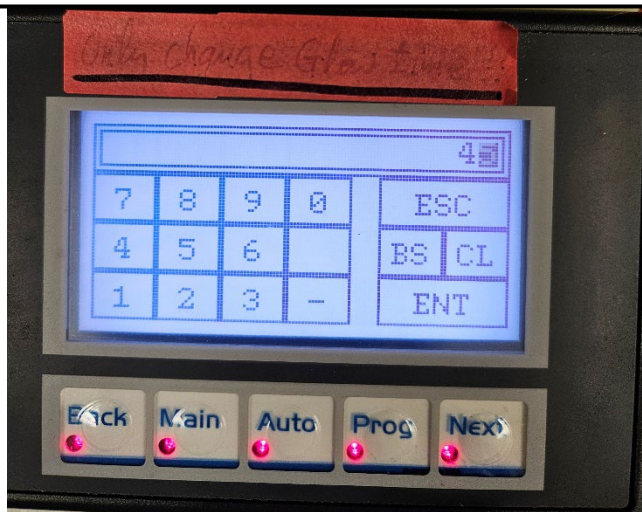
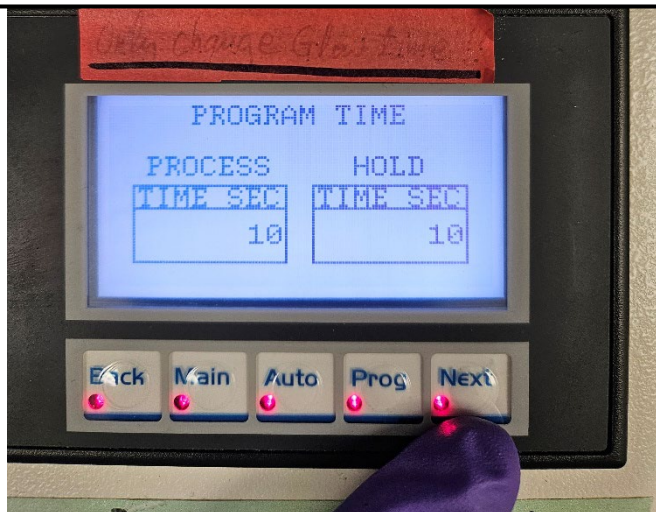
- Operating the glow discharger is a combination of physical buttons and a touch screen. Always check the settings to see if they match what you need. For common grids, the following settings are good: 15 mA, glow time 45 s, hold time 15 s. The image below shows a different setting that we will change.



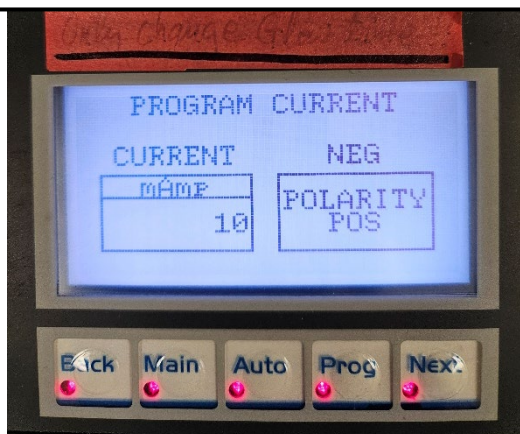
- To change settings, first press the "Prog" button. DO NOT change the vacuum settings (mBar). Not only is it dangerous to do so, you are unlikely to need to. Pressure should be 0.40 mBar and will display 0.39 mBar on the home screen.



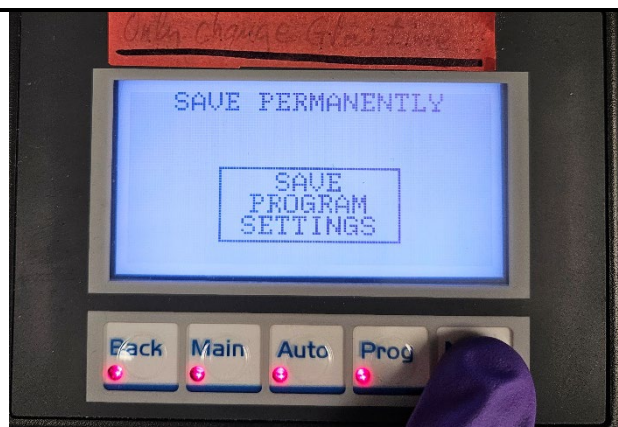
- Press the "Next" button (it can be unresponsive so you may need to press hard). Here, you can change the time for Glow (Process) and Hold. Glow is how long the plasma will last; hold is how long the vacuum will be held without glow. Touch the screen to change the settings, which brings up a numerical touchpad. Press "Enter" to save the setting. Press "Next" to advance to the next option screen.



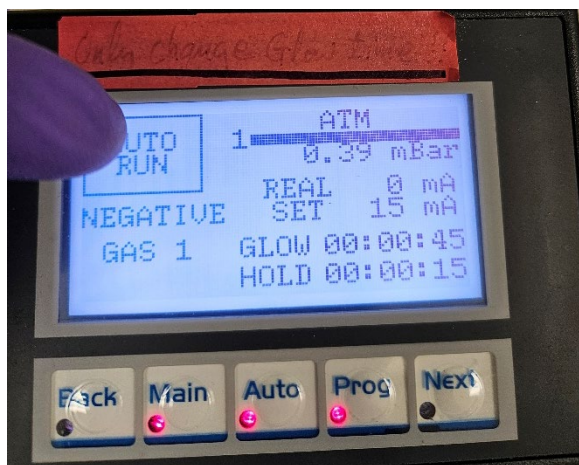
- Press the Current box to change the current. Make sure "Polarity POS" is selected. Press "Next" to advance.



- Press "Next" on the following screen. You do not need to save the setting.



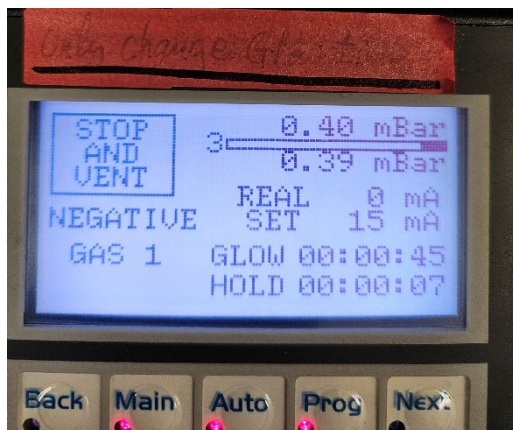
- With the desired settings now in place, start the process by pressing "Auto Run" on the home screen.



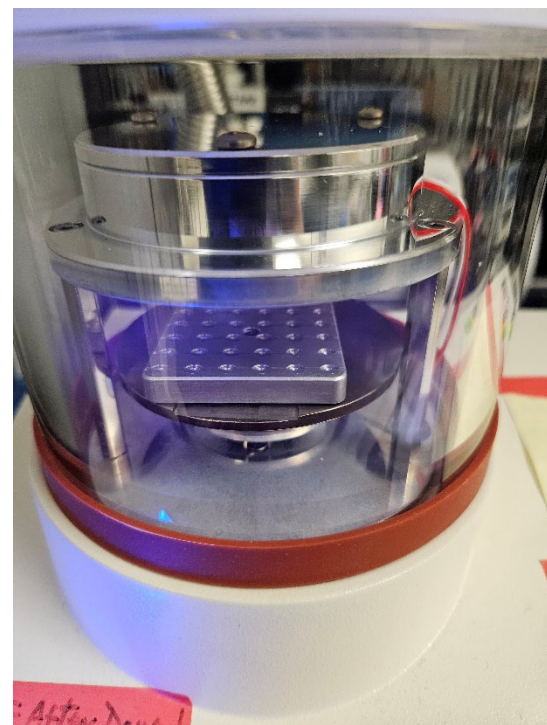
- You should hear the vacuum starting. The vacuum status is displayed in the top right. If you ever need to interrupt the process, tap "Stop and Vent".



- Once the vacuum is reached, the Hold will begin and count down.



11. After the Hold, the machine will automatically proceed to Glow. During this phase, plasmized air is used to add a charge to the grid, which also helps to remove some volatile contaminants if present. You will see the plasma as a purple cloud between the two large discs inside the chamber. **PAY ATTENTION** for any signs of electric arcing, or "lightning", as this is a sign that there is too much junk on the sample or the stage and your grid could be compromised. If this happens, clean the stage and block with alcohol and start again. You may want fresh grids, too.



12. After the Glow, the vacuum will be slowly released. During this time, the box at the top left of the screen will still display "Stop and Vent". **DO NOT** press this button or attempt to remove the glass jar while this button is displayed. Be patient and let the vacuum slowly release. Once it is safe to remove the jar, the button will change back to display "Auto Run". At this point, carefully remove the jar and take out the grids. Replace the jar and shut off the machine.

