Freeze drying

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Instructions for the Labconco Triad lyophilizer

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1. We need to cool down the coils an hour before the scheduled freeze drying. First start by drawing a vacuum. Seal all the vents on the left side of the lyophilizer (notch facing up = closed), turn vac release to "closed", close the door and press "vac" button. Write down time and user in lyophilizer logbook.
2. Once the vacuum is reasonably low (this is not crucial), write down the pressure in logbook.
3. Cool down the coils and the shelf by switching "mode" to "manual", set the shelf temperatures (the coil temperature always goes down to -90C), and hit "run". The shelf temperature is best set at ~ -20C since a high shelf temperature (e.g. 0C) will cause the solution to melt and boil. Low shelf temperature will make the drying slower but it is okay. The vacuum before cooling is to minimize the water condensed onto the coil during this time. Cooling down to set temperature could take 20mins to an hour.
4. Cool down the tube rack or falcon tube rack by putting it in -20 fridge.
5. Make sure we have reached desired shelf and coil temperature. Press "vac" again to turn off vacuum, switch vac release to "open" and let air rush into the chamber until pressure rises to the point where we can open the door. Put sample on the chilled tube rack. Quickly put the tube rack with samples into the chamber and close the door. Press "vac" to start pumping again.
6. The pressure will be around .020mbar since there will be trace amount of water vapor in the chamber. Continue freeze drying until all the visible ice is gone. Pressure will drop to ~0.010m. Record this in the logbook.
7. Take out the samples and leave the door open.
8. Log the hours used. Take out the drawer and clean with dish soap and water (some vacuum oil will be sucked-back into the chamber). Leave the door open so that the coil completely dries out or wipe the coils dry if lyophilizer is needed immediately again.