Instruction for the EMS Quorum 150T ES sample preparation system

PPE: safety glasses and nitrile gloves

This is a multifunction machine. Please check with facility staff about reconfiguring for different purposes.
timed sputter coating • **FTM terminated sputter coating** • **glow discharge** • **Appendix**

timed sputter coating

The Au target is installed by default. If you want to use the Cr target, please check with facility staff.

1. check to make sure the coater is setup for timed sputter coating
2. set the inlet valve to deliver Ar gas
3. open the valve on the Ar tank
4. turn on the machine with the power switch in the back
5. open the top cover and secure it with the landyard on the cabinet above
6. carefully remove the glass cylinder and place it on the lint free cloth to the right of the machine
7. install the sample so that the top of the specimen is about 60 mm from the base plate of the chamber, see appendix for **stage options**
8. carefully replace the glass chamber
9. gently lower the top cover and align it with the glass chamber
10. on the touch screen display, tap the Edit Profile button
    i. select "tSputter Au 10 mA 7nm/min" and then tap the Edit button
    ii. change Sputter Time according to your need, e.g., 180 s will result in a 20 nm thick coating
    iii. tap OK to return to the Edit Profile menu
    iv. click the + sign to show System, select and then tap the Edit button
    v. tap on Stage rotate to select Yes or No
    vi. tap on Stage rotate speed to configure, 0 is the slowest and 100 is the fastest
    vii. tap the OK button to get back to the main menu
11. tap the drop down arrow to select "tSputter Au 10 mA 7nm/min" and tap the Run Profile button to begin
12. the chamber will be vented when the process is done, the top cover can be lift open easily to retrieve the specimen, or to reload another batch for coating

    Note: If the top cover cannot be lifted easily, venting is not complete. Do not force open the top cover. Manually vent the chamber by tapping the drop down arrow to select "QT Vent chamber" and tap the Run Profile button.
13. replace the glass cylinder and top cover
14. if this is your last operation, turn off the power switch and close the valve of the Ar tank

    Caution: If you forget to turn off the valve and drain the Ar tank, you will be responsible for replacing the tank which can be quite costly.
15. clean up the work area and remember to submit your usage

FTM terminated sputter coating

This protocol is similar to the **timed** protocol, but uses a film thickness monitor (FTM) to control the coating rather than time.

1. check to make sure the coater is set up for sputter coating and the FTM is installed

2. the procedure is the same as in the **timed** protocol, except
    - use the profile "fSputter Au 10mA"
    - set the desired thickness

glow discharge

This protocol is for relatively thin and flat specimens. The default of 20 mA and 30s works for both TEM grids, glass slides, and coverglasses.

1. check to make sure the coater is setup for glow discharge
2. set the inlet valve to deliver air
3. turn on the machine with the power switch in the back
4. open the top cover and secure it with the landyard on the cabinet above
5. carefully remove the glass cylinder and place it on the lint free cloth to the right of the machine
6. install the sample so that the specimen is about 35 mm from the head; or about 35 mm from the base plate of the chamber when you use the standard shaft with the collar in the upper most position
7. carefully replace the glass chamber
8. gently lower the top cover and align it with the glass chamber
9. on the touch screen display, tap the Edit Profile button
    i. select "glow discharge" and then tap the Edit button
    ii. adjust current as needed, 20–30 mA
    iii. change Duration according to your need, 20–30 s
    iv. tap OK to return to the Edit Profile menu
    v. click the + sign to show System, select and then tap the Edit button
    vi. tap on Stage rotate to select Yes or No
    vii. tap on Stage rotate speed to configure, 0 is the slowest and 100 is the fastest
    viii. tap the OK button to get back to the main menu
10. tap the drop down arrow to select "glow discharge" and tap the Run Profile button to begin
11. the chamber will be vented when the process is done, the top cover can be lift open easily to retrieve the specimen, or to reload another batch for glow discharge

    Note: If the top cover cannot be lifted easily, venting is not complete. Do not force open the top cover. Manually vent the chamber by tapping the drop down arrow to select "QT Vent chamber" and tap the Run Profile button.
12. replace the glass cylinder and top cover
13. if this is your last operation, turn off the power switch
14. clean up the work area and remember to submit your usage

Appendix

stage options

- standard stage, 50 mm in diameter: for ≤12 mm diameter 1/8" (3 mm) pin stub, ≥12.5 mm diameter cylinders, or anything that can be placed on the stage in a stable manner; mounted on a shaft with height-adjustable collar
    - 35 mm standard shaft
    - 55 mm long shaft
- rotacoter stage: for ≤12 mm diameter 1/8" (3 mm) pin stub or 12.5 mm diameter cylinders; only tilt adjustment, no direct height adjustment