Labtron LVSC-A10 – Standard operating procedure

Updated 2025-12-12 (Josh Dahmer)

PURPOSE

The spin coater is used to spread a uniform layer of material on slides and wafers. In the Wheeler lab, this layer is typically a hydrophobic coating of either Teflon or Fluoropel to enable aqueous droplet movement on microfluidic devices. This document provides instructions for safe usage of the spin coater.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

- Lab coat
- Nitrile gloves
- Safety glasses/goggles

MATERIALS AND EQUIPMENT

- Fume hood
- Nitrogen gas cylinder and air gun
- Either 1% Teflon in FC-40, or 1% Fluoropel in PFC110
- Disposable pipette
- Item to be coated, e.g. glass slide
- Acetone squeeze bottle
- Wipes

PROCEDURE

1. Reserve spin coater on eLAB. (In CCBR, the hood is also used for laser cutter exhaust. Do not use spin coater and laser cutter at same time, since debris from laser cutter will vent into hood and fall on substrates to be coated.)
2. Open fume hood to working height and turn on the spin coater. (See Fig 1a for power button.)
3. Select desired program/settings on control panel (see Fig 2).
4. Open spin coater lid and add or remove chuck using Allen key (Fig 1b), depending on size of substrate to be coated.
5. Use nitrogen gun to blow dust off substrate to be coated. (Refer to **gas cylinder SOP** for safe operation of compressed gas.)
6. Place substrate on spin coater chuck
7. Press “PUMP” button on control panel to enable suction, securing substrate in place for spinning. Test by hand to make sure substrate is properly secured

8. Use disposable pipette to dribble coating solution (e.g. Teflon or Fluoropel) on substrate surface. Spread solution with pipette stem to cover important areas of surface, e.g. DMF electrodes. Get rid of any bubbles.
9. Close lid and press “Play/Pause” button. Spin program will commence. Wait until it finishes. The pump will shutoff automatically when program is complete
10. Open lid. Grip coated substrate by edges and pry away from chuck. Set aside for drying. (If using oven or hot plate, see corresponding SOPs.)
11. Repeat steps 5-9 as needed for coating multiple substrates.
12. Use acetone and wipes to thoroughly clean waste liquids from spin coater interior. (Bowl, lid, chuck, etc.) **Do not skip this step.** Do not drip acetone on control panel or spin coater chuck.
13. Turn off spin coater power.

Fig 1: Labtron spin coater. **a)** Front view of spin coater with power button circled. **b)** Inside of spin coater. Removable adapter is used for smaller or larger slides

Fig 2: Spin coater control panel.

HAZARDS

High pressure: The spin coater uses pressurized air from a pump. Also see gas cylinder SOP, for safe usage of nitrogen gas cylinder for dust removal.

Solvent vapors: The spin coater should be operated inside a fume hood to minimize solvent vapor inhalation.

Shrapnel: If substrate is not secured properly during spinning or dust removal with nitrogen gun, it may be sent flying and shatter.