Single Layer PMMA (950k) in Anisole
Spin Coating / Exposure Process

Equipment:

1. SVG Track Coater or Solitec Spin Coater
2. Nanospec Film Thickness Monitor
3. FEI 430 NanoSEM E-Beam Lithography System

Spin Coating Process:

1. Begin with a new or recently cleaned wafer with a known history.
2. Program the spin coater and hotplate with the following recipe:

Event	Seconds	RPM	Temp °C
Dispense **(SVG only)**	25	50	20
Spread	6	400	20
Spin	45	3000	20
Wash **(SVG only)**	8	2000	20
Bake	300	0	180

3. Allow the temperature of the hotplate to reach the desired setting. While waiting it's a good idea to test the recipe with a dummy wafer.
4. Prepare the wafer for spinning
    a. If using the SVG track coater, load the wafer into the Load Cassette.
    b. If using the Solitec Spin coater, manually center the wafer on the chuck.
5. Dispense ~5ml of PMMA using a syringe that is fitted with a 0.1 or 0.2um filter. Be sure to remove all the air bubbles from the syringe and filter before dispensing.
    a. SVG track coater: dispense the PMMA during the "Dispense" event.
    b. Solitec Spin Coater: dispense the PMMA before the "Spread" event.
6. Once the spinning is completed bake the sample
    a. SVG Track Coater: Allow the wafer to travel to the hotplate and bake
    b. Solitec Spin Coater: Remove wafer from chuck and place on hotplate to bake
7. Remove wafer from hotplate and allow to cool on the cooling chuck for ~5 minutes.
8. Measure on the Nanospec using the PMMA Refractive Index of 1.488.
    a. Thickness should be ~80nm if coating a 4" wafer.

Exposure Process:

1. Expose using the FEI 430 NanoSEM EBL System at 30kV and 1.6 spot size.
    a. For 100nm film thickness normally 300uC/cm^2 is an optimal area dose.
    b. If using PMMA for the first time or for a particular feature size, completing a dose array is recommended.
2. After exposure is complete, develop in MIBK:IPA (1:3) solution with slight agitation for 70 seconds.
3. Rinse in an IPA (Isopropanol) bath for 60 seconds.
4. Gently dry with nitrogen gun.
5. Bake under the white lamp located in the FEI SEM room to remove any solvents.
6. Inspect in the FEI SEM using 5kV and 2.0 spot size to determine if pattern cleared fully.

A. Gusman 12/16/2010