



HPR 504 PHOTO RESIST

1. OVERVIEW

This protocol is developed as a ~1.25µm thick positive resist recipe for use by Nanofab users. This resist is easy to use and stands up very well to all of the wet etchants used in the Nanofab facility. It is also used with success in our sputter systems for lift-off procedures.

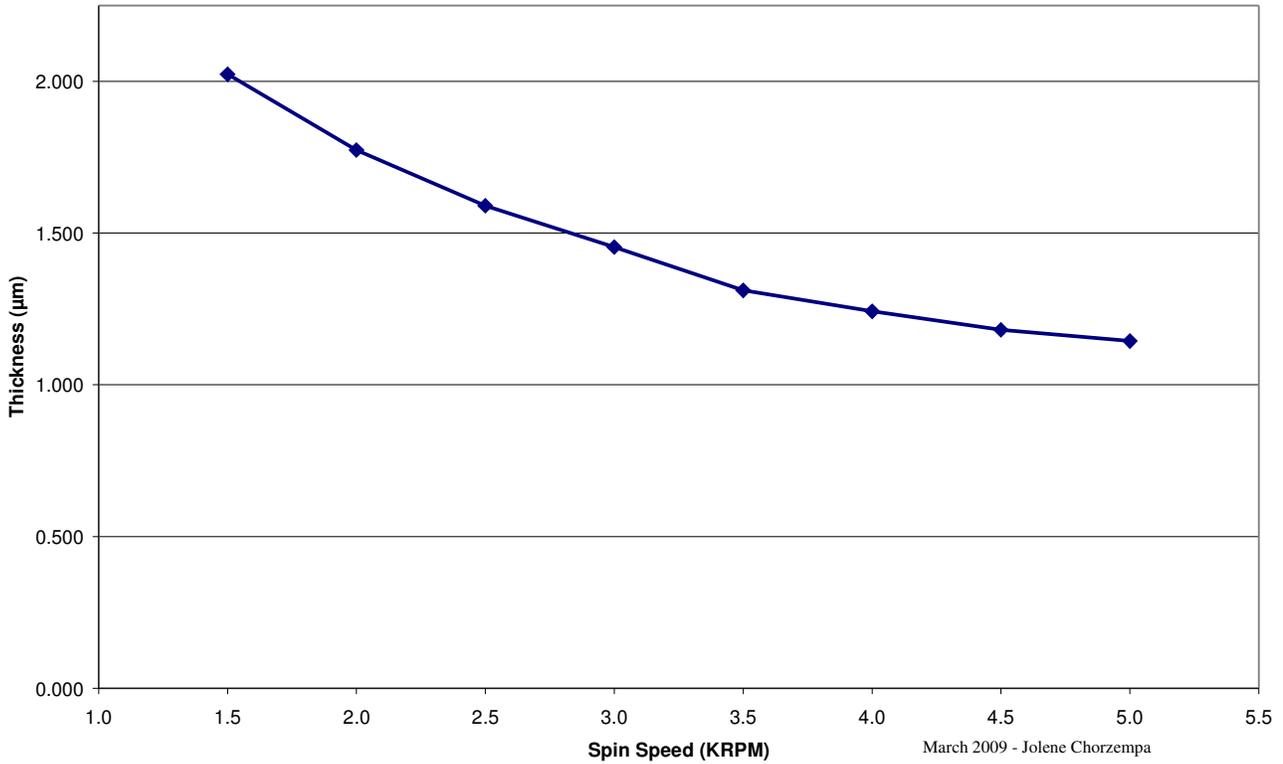
2. PROCEDURE

1. Use HPR 504 found in bottle in lithography or from the fridge. Label a cleanroom wipe with chemical name, user name and date. Pour into a small beaker, with a larger beaker inverted over top of the smaller beaker and place on the cleanroom wipe.
 - o Bottle in Lithography:
 - If taking the bottle from the fridge, let stand for 30mins to reach room temperature
 - Pour 5-10mL of HPR 504 for each 4" wafer (circle or square)
 - o Fill from Fridge
 - Let rest for ~2 hours to warm up
 - Pour into a labeled amber bottle
2. Pour 5-10mL resist into the center of the wafer and spin the resist at the following settings:
Spread
 - 10 seconds @ 500RPMSpin
 - 40 seconds @ 4000RPM
3. If using silicon substrates Soft bake using either the CEE or Solitec hotplate.
 - Set to 115°C. This takes ~30minutes to warm up.
 - Soft bake for 90 seconds.
4. If using glass/borofloat/quartz/etc. substrates Soft bake using the Despatch/Blue M oven.
 - Set to 115°C.
 - Soft bake for 30min
5. After soft baking the wafers, they must be re-hydrated for approximately 15min. This step is VERY important for proper exposure and developing of the resist.
6. The optimum exposure time is typically between 2-3 seconds. Record the measured Exposure Factor and time to set consistent exposures. The exposure energy is a constant.
$$ExposureTime(s) = \frac{ExposureEnergy(mJ)}{ExposureFactor\left(\frac{mW}{cm^2}\right)}$$
7. The developer used is 354 developer found at the lithography station. The resist should develop in approximately 15-20 seconds.
8. Inspect the developed wafer. If necessary, re-develop.
9. 354 Developer may be disposed of by rinsing down the drain with large amounts of water and dump-rinsing the bath. HPR504 resist can be rinsed with Acetone into the solvent waste (Litho Wet Deck #1) and then the beaker rinsed with IPA into the solvent waste. Hang to dry.
10. Hard Bake if doing a Lift-Off process. Set temperature for 115°C and bake for 120 seconds.

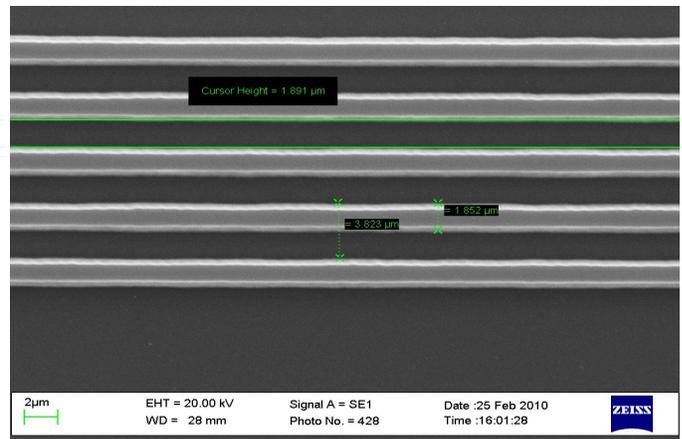
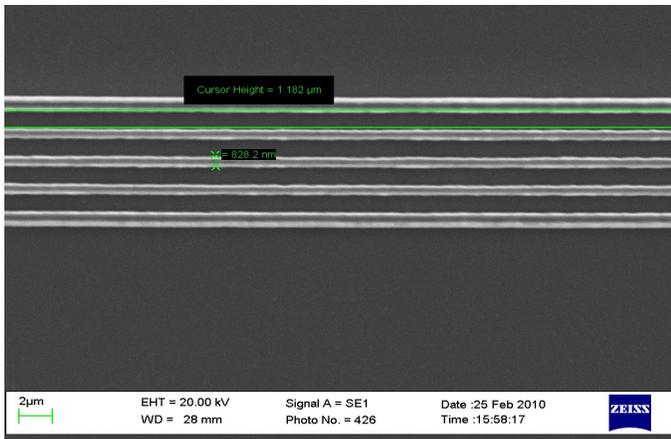


3. TECHNICAL DATA

HPR 504 Spin Speed Curve



SEM Images:



4. APPROVAL

QUALIFIED TRAINER: Jolene Chorzempa
TRAINING COORDINATOR: Stephanie Bozic