



## LOR5B/HPR504 BILAYER RECIPE

### 1. OVERVIEW

This protocol is developed as a ~1.7 $\mu$ m thick bilayer for use by NanoFab users. This process can be used successfully for lift-off patterning of metals. Feature widths as low as 2 $\mu$ m have been achieved.

### 2. PROCEDURE

1. An adhesion promotion layer (HMDS) will be required if patterning on bare silicon, silicon oxide or silicon nitride.
2. Use the LOR 5B found in the resist cabinet in Wet Aisle 1 and the HPR 504 bottle in lithography or from the fridge. Label a cleanroom wipe with chemical name, user name and date. Pour into small beakers, with larger beakers inverted over top of the smaller beaker and place on the labeled cleanroom wipe.  
If taking the bottle from the fridge, let stand for 30mins to reach room temperature
3. Pour 5mL of LOR 5B resist into the center of the wafer and spin the resist at the following settings:  
Spread  
    10 seconds @ 500RPM  
Spin  
    40 seconds @ 3000RPM
4. Bake the LOR 5B layer at 150°C for 5min. Let wafer cool and re-hydrate for 10mins after bake.
5. Pour 5-10mL of HPR 504 resist into the center of the wafer and spin the resist at the following settings:  
Spread  
    10 seconds @ 500RPM  
Spin  
    40 seconds @ 4000RPM
6. Bake at 115°C for 90 seconds. Let wafer cool and re-hydrate for 10 minutes after bake.
7. Exposure is the same as HPR 504 single layer.
8. Develop in 354 developer for ~20 seconds. Rinse with DI water and dry with N<sub>2</sub>.
9. Bake at 115°C for 120 seconds. Let wafer cool for 10 minutes.
10. Develop in MF 319 developer to selectively develop the LOR 5B. A developing time of up to 40 seconds will result in an undercut of up to 5 $\mu$ m. For smaller features sizes, reduce developing time.

### 3. TECHNICAL DATA

The resist works well for patterning features down to 2 $\mu$ m. The undercut improves lift-off processes for evaporated metals up to 1 $\mu$ m and 400nm for sputtered metals.

LOR 5B is removed using Remover PG. Rinse for 2 minutes in an acetone bath to remove HPR 504, then a 2 minute rinse in Remover PG, followed by an IPA rinse and a DI water rinse and N<sub>2</sub> dry.



## 4. APPROVAL

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