



## Electron Beam Lithography – XR1541 (HSQ)

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**Summary:**

*This document describes the pre-processing and post-processing steps for Electron Beam Lithography on Silicon wafer/sample coated with XR1541 resist (undiluted) using the Vistec 5000+ E-Beam system.*



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### 1 Associated Documents & References

Chemicals used: HSQ XR1541, CD26, DI water  
MSDS – please read the corresponding MSDS sheets located in the lab

### 2 Equipment Used

EQUIPMENT used: Thin-film measurement system, Spin-Coater (Positive resist Wet-bench), Nikon Optical Microscope in Wallberg Nanolithography Facility.  
(The above equipment have to be reserved through the online resource scheduler. If you require assistance from staff, please check availability with them before reserving the equipment. Users have to go through regular training before using this equipment alone.)

### 3 Verifications Prior to Processing

- Ensure wafer is clean by following E-Beam Wafer-Clean process protocol 1a
- Ensure wafer/sample is centered on the spinner chuck

### 4 Recipe description

#### ZEP520A Spinning - Spinner Laurell WS-400B-6NPP-LITE

(i) Spinner parameters: Spin speed – 2000 rpm

Acceleration – 584

Time – 60 s

(ii) Prior to spinning, set hot plate @ 100 °C. After spinning, place wafer/sample on hot plate for 3 mins or 40 mins in oven.

(iii) Verify resist thickness with the Thin-film measurement system.

#### Wafer/Sample development after E-Beam Lithography Exposure

Prepare the volume of chemicals required according to the wafer/sample size

In 2 separate beakers, prepare and place the following

(i) CD26

(ii) DI water

Place wafer in the developer CD26 for 60 s and gently agitate the beaker

After the 60 s, place wafer in the DI water solution for 30 s

Blow dry gently for about 40 s

(iii) Inspect using the Nikon Optical Microscope



## 5 Technical Data

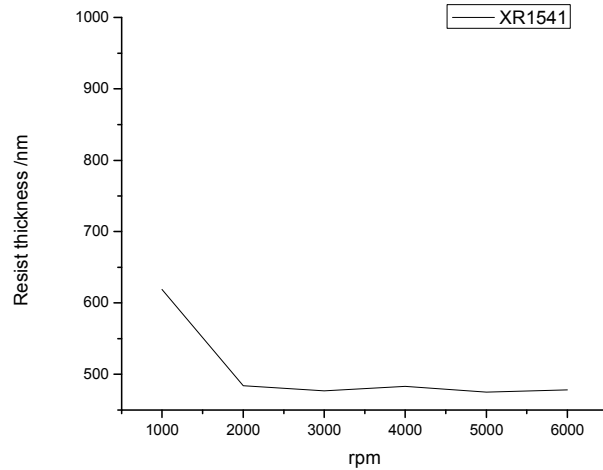


Fig. 1: Spin curve for undiluted XR1541

## 6 Measurements & Statistical Process Control

### 6.1 Measurements

4 Thin-film measurements are taken for each spin speed and the average is recorded. The tolerance for the resist thickness measurements is +/- 3 nm.

## 7 Record of Revisions

Rev. 1  
Rev. 2

First Edition  
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