



12-16-2016

ZEP520A Spin Curves and Dilution Characterization

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ZEP520A Spin Curves and Dilution Characterization

Abstract

Spin curves for ZEP520A from ZEON Chemicals for the Singh Center for Nanotechnology were studied under non-diluted and diluted conditions by weight.

Keywords

ZEP520A, Spin Curves, Spin, Curve, Dilution, Characterization

Comments

Spin curves for ZEP520A for the Singh Center for Nanotechnology were studied under non-diluted and diluted conditions by weight.

Goal:

This report documents the spin curves for ZEP520A electron beam lithography resist from ZEON Chemicals. Dilution by weight of ZEP520A vs spin speed from 1000 to 6000 rpm was generated for this work. The aim is to provide approximate dilutions using anisole to acquire a specific resist thickness at any given spin speed. The lower rpm for a given thickness implies a higher dilution and less resist material, which means less consumable waste.

Materials:

- ZEON Chemicals ZEP520A.
- Anisole
- Si wafers
- Two 80mL beakers
- One amber bottle

Equipment:

- ReynoldsTech Spinner
- Torrey Pines Scientific Hotplate
- Filmetrics F50
- Digital Scale to measure dilutions

Protocol:

ZEP520A Dilution Protocol

1. Place the first clean 80mL beaker onto digital scale and tare.
2. Using a pipette, place 5g of ZEP520A into the clean 80mL beaker. Remove beaker from scale.
3. Place the second clean 80mL beaker onto digital scale and tare.
4. Using a pipette, place 5g or 10g of anisole into the clean 80mL beaker.
5. Pour the contents of the anisole into the beaker containing the ZEP520A. Alternate pouring from one beaker to another to guarantee proper dilution.
6. When finished, pour the dilution into an amber bottle. Repeat steps 1-5 for more dilutions.

Coat

1. Mount wafer and ensure that it is centered.
2. Spin wafer at a fixed RPM for 60 seconds.

Soft Bake

1. Bake wafer at 180 °C for 90 seconds and allow wafer to cool after removal.

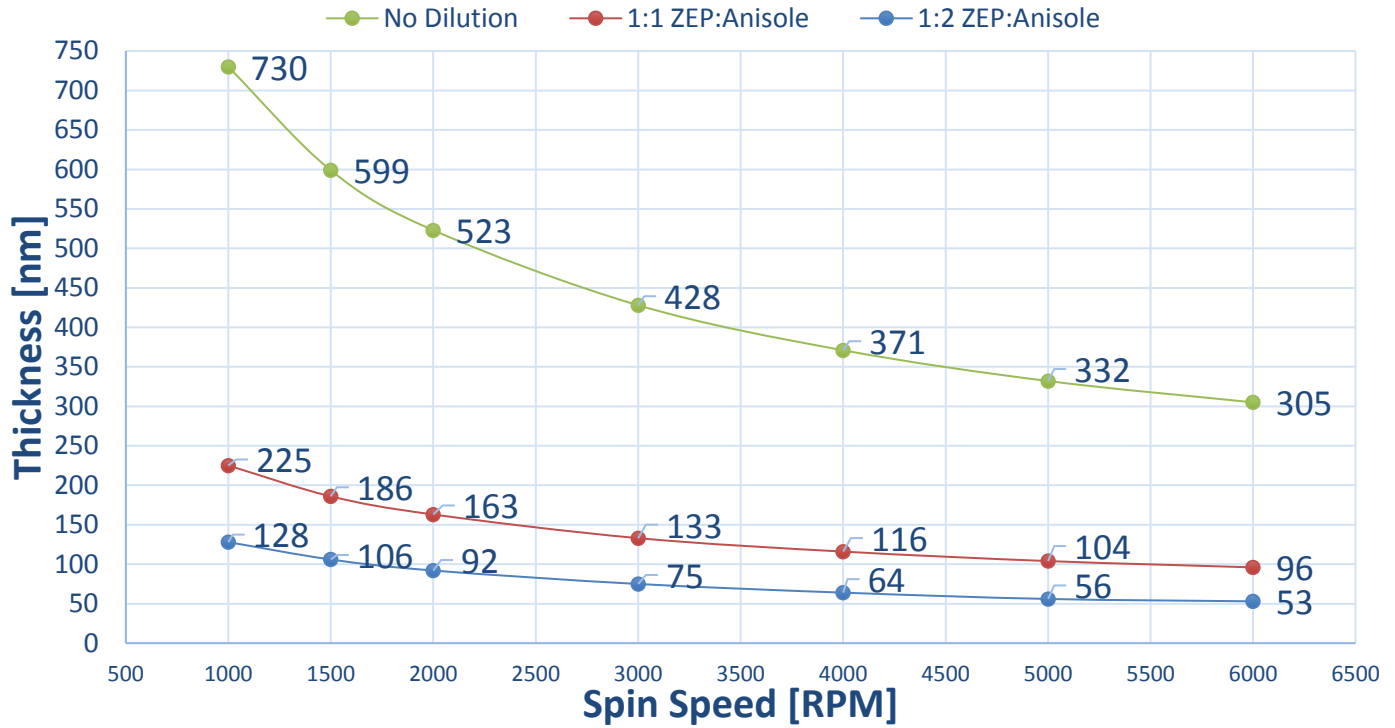
Measurement

1. Allow the Filmetrics F50 light to warm up for at least 5 minutes.
2. Click *Baseline...* to calibrate the tool using the SiO₂ and Si standards.
3. Mount wafer and select the *ZEP520A on Si* recipe.
4. Edit the recipe so that 85 points are measured on the wafer with a 1 cm edge exclusion.
5. Click *Start* to measure the resist thickness of each wafer.

Results:

Spin Speed [RPM]	No Dilution	1:1 ZEP:Anisole	1:2 ZEP:Anisole
1000	730	225	128
1500	599	186	106
2000	523	163	92
3000	428	133	75
4000	371	116	64
5000	332	104	56
6000	305	96	53

Dilution by Weight



Dilution by Weight

