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## Heidelberg DWL66+ S1805 Contrast Curves


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## Heidelberg DWL66+ S1805 Contrast Curves

### Abstract


Accurately gauge the optimal machine setting for MicroChem S1805 using the Heidelberg DWL 66<sup>+</sup> and obtain contrast curves based on the 2mm and 10mm writehead.

### Keywords

S1805

### Disciplines

Electronic Devices and Semiconductor Manufacturing | Nanotechnology Fabrication

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**Goal:**

Accurately gauge the optimal dose for MicroChem S1805 using the Heidelberg DWL 66+.

**Materials:**

- Microchem S1805 Photoresist
- SurPass 4000 Primer (<http://www.discheminc.com/>)
- Microchem MF-319 Developer
- Acetone
- Isopropyl Alcohol (IPA)
- 4 inch Silicon Wafers

**Equipment:**

- Torrey Pines Scientific hotplate
- Reynoldstech 1000 RPM/second spinner
- Heidelberg DWL-66+ Laser Writer using the 2mm and 10mm write head with 1%,12.5%,25%, and 50% power filters. Laser wavelength: 355nm.

**Protocol:**

Prime

1. Mount wafer and ensure that it is centered.
2. Deposit 7 milliliters of SurPass 4000 in the center of the wafer.
3. Spin on primer at 3000 RPM for 45 seconds.
4. Rinse with IPA with 15 seconds left on the spin cycle.

Coat

1. Mount wafer and ensure that it is centered.
2. Deposit 7 milliliters of S1805 photoresist in the center of the wafer.
3. Spin on photoresist at 4500 RPM for 60 Seconds.

Soft Bake

1. Bake wafer at 115 °C for 60 seconds.

Expose

1. Expose two separate wafers 8 times each for a total of 16 exposures using every power filter (as well as no filter) for both the 2mm write head and 10mm write head. Each of the 16 exposures consists of 10 squares; each assigned an exposure dose from 40% to 100% with 10% gradations to further expand the data.

Develop

1. Dispense approximately 150 milliliters of MF-319 developer into a six inch cylindrical container.
2. Fully submerge the exposed wafer.
3. Agitate and develop the wafer for 60 seconds.

**Results:**

