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Performance Check 1 on MA6 Mask Aligner

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Keywords

MA6 mask aligner

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On-site Inspeicton 1 on MA6 Mask Aligner (Graduate Student Fellow Program)

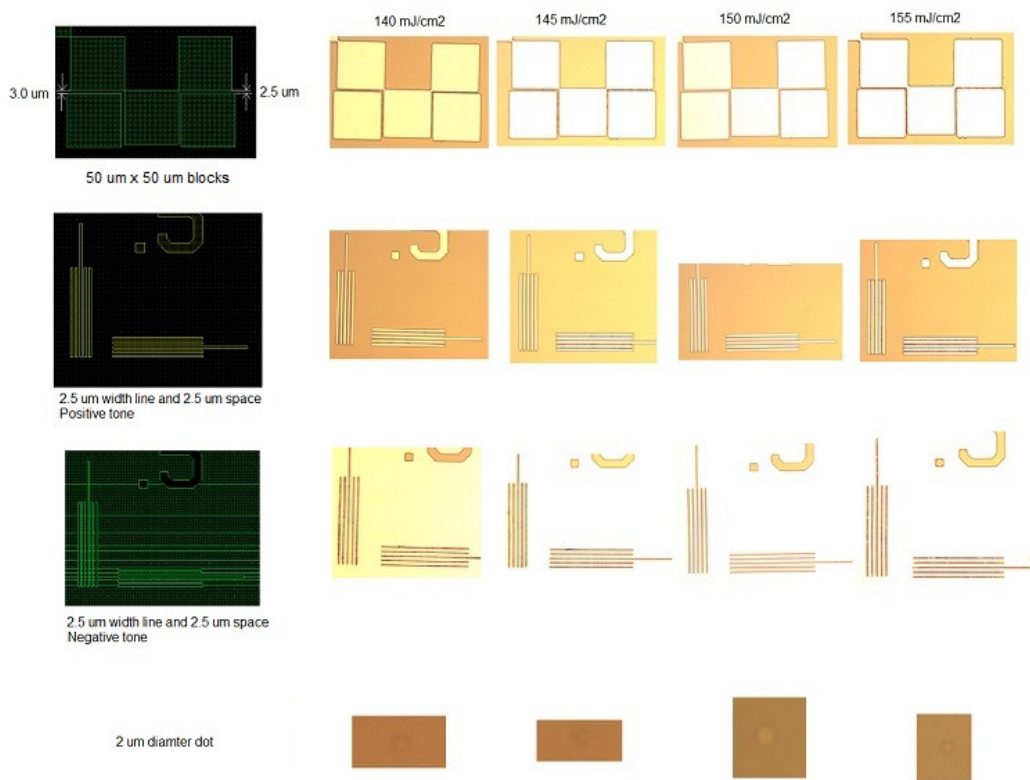
Exposure

Prepared by Jonathan Bryan (8/26/2014)

S1813 Coating

- Cleaning: Acetone Sonic-5min, IPA Sonic-5min
- Lithography tool: MA6
- HMDS coating for promoting adhesion:
 - Dehydrate wafer: 150 °C, 5 min, on the hot plate
 - Spinner: 5000 rpm 60 sec
- S1813 coating:
 - Spinner: 5500 rpm, 60sec (Acceleration 500 rpm/sec)
 - Pre-bake before exposure: 110 °C, 5 min, on the hot plate.
- Exposure: 140, 145, 150, 155, 160 mJ/cm²
- Develop: MF-319, 30 sec

The best condition is found to be at 150 mJ/cm².



S1818 Coating

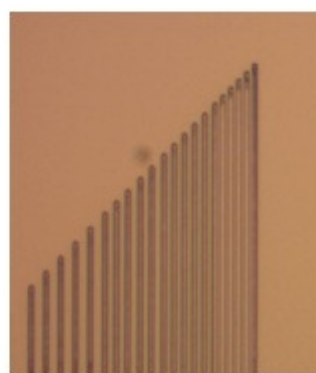
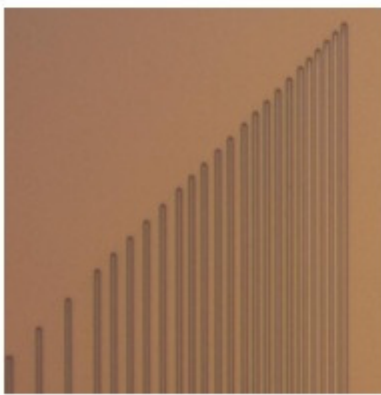
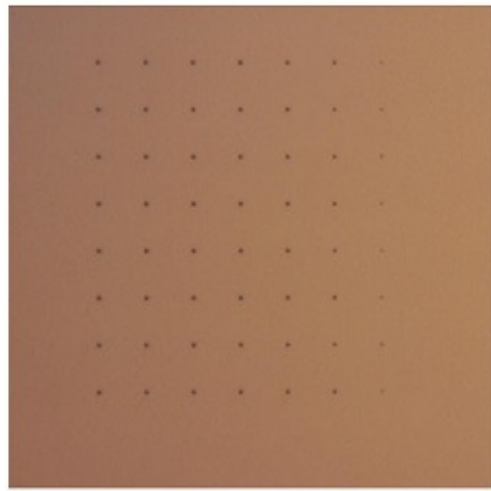
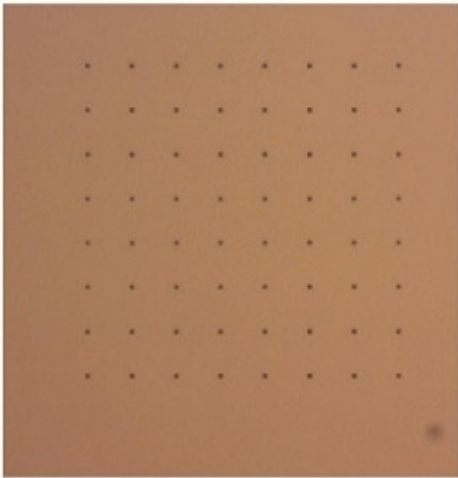
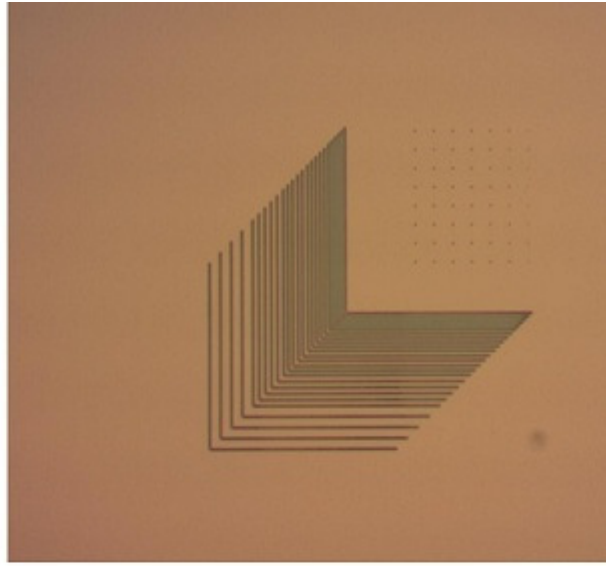
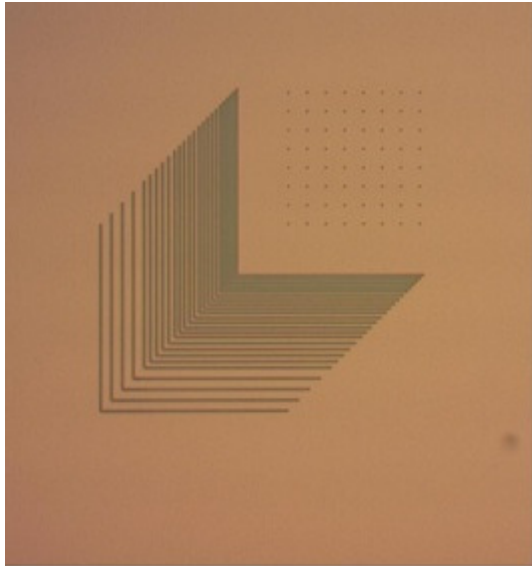
Prepared by Jonathan Bryan (10/17/2014)

- Cleaning: Acetone Sonic-5min, IPA Sonic-5min
- Lithography tool: MA6
- HMDS coating for promoting adhesion:
 - Dehydrate wafer: 150 °C, 5 min, on the hot plate
 - Spinner: 5000 rpm 60 sec
- S1818 coating:
 - Spinner: 5500 rpm, 30sec (Acceleration 500 rpm/sec)
 - Pre-bake before exposure: 110 °C, 5 min, on the hot plate.
- Exposure: 140, 150, 155 mJ/cm²
- Develop: MF-319, 60 sec

- Sample prepared for:
 - 140 mJ/cm² and 30s development time
 - Development time was too low – lousy result
 - 150 mJ/cm² and 60s development time
 - 155 mJ/cm² and 60s development time

1.5 μm width Line and Various Spaces and 1.5 μm diameter dots

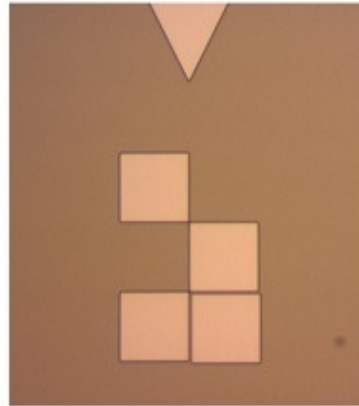
- Distances between 1.5 μm width lines: 10, 5, 4, 3, and 2 μm.



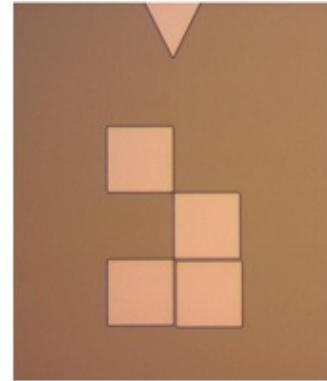
150 mJ/cm²

155 mJ/cm²

50 μm x 50 μm Block and 1.5 μm Space



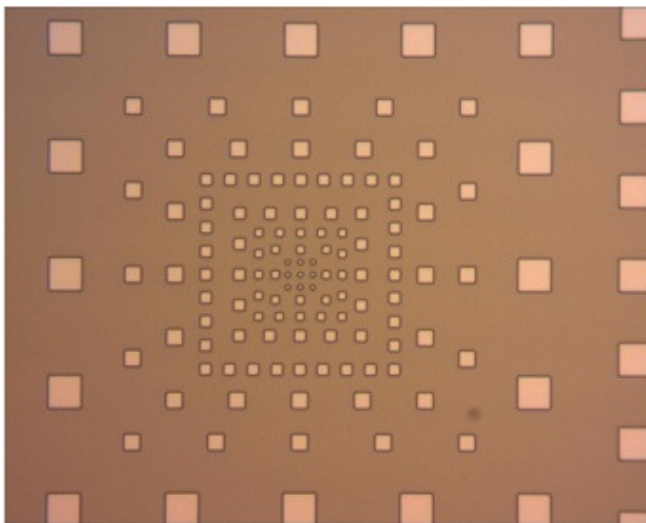
150 mJ/cm²



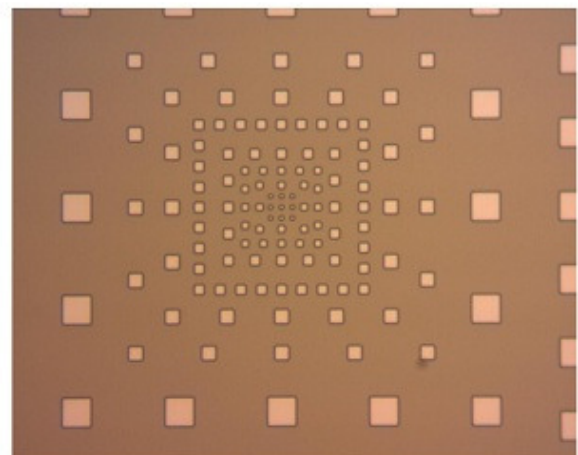
155 mJ/cm²

Various Blocks

- Sizes of blocks: 3, 5, 7, 10 μm , and larger.



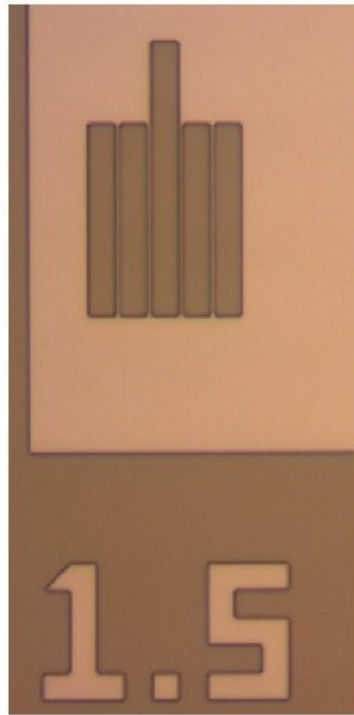
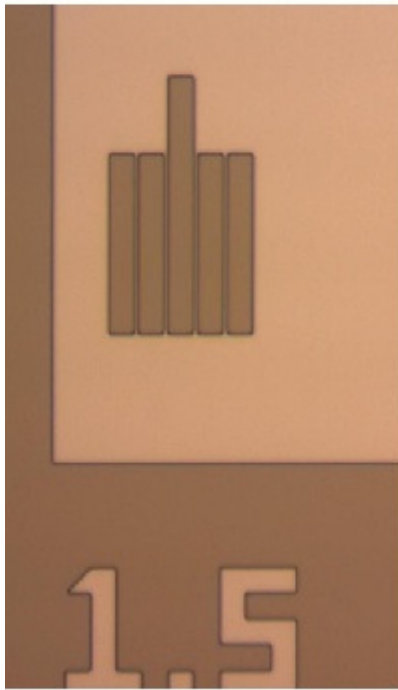
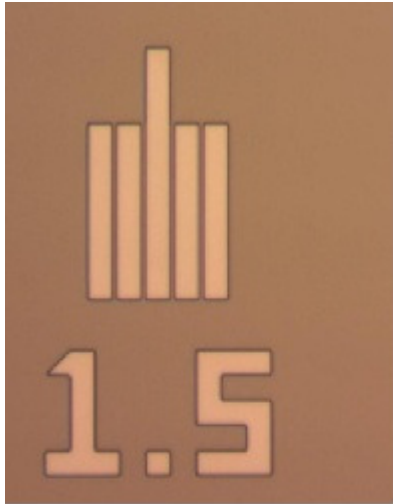
150 mJ/cm²



155 mJ/cm²

Positive and Negative Tones

- Line width: 10 μm
- Line gap: 1.5 μm



150 mJ/cm²

155 mJ/cm²