nLOF2020 Profiles using Contact Aligner

AZ nLOF-2020 (Negative Tone)

Process:
- Clean a Si wafer piece: Acetone (2’’) + Methanol (1’’) in ultrasonic cleaner; DI water resin and N\textsubscript{2} blow dry.
- Dehydration bake @ 110 °C for 5 minutes.
- Spin-on HMDS @ 3000 rpm for 30 seconds.
- Spin-on nLOF-2020 resist @ 3000 rpm for 30 seconds.
- Soft bake @ 110 °C for 90 seconds.
- Resist edge bead removal using Q-tip soaked with Acetone.
- Expose resist with a I-line filter (1.5 mW/cm\textsuperscript{2} using 365-nm detector).
- Post exposure bake @ 110 °C for 60 seconds.
- Develop the exposed resist pattern in AZ-300 MIF developer.

Result:

**Figure 5** Resist exposure time=10 seconds and development time=60 seconds (over development) (a) Resist profile; (b) Resist side-wall.

![Resist Profile](image1.png)

Note: Resist Thickness=2.05 µm and the under-cut feature appears in the resist profile.

**Figure 6** Resist exposure time=5 seconds and development time=60 seconds (over development) (a) Resist profile; (b) Resist side-wall.

![Resist Profile](image2.png)

Note: Resist Thickness=1.96 µm and the under-cut feature appears in the resist profile.

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Figure 7 Resist exposure time=10 seconds and development time=25 seconds (a) Resist profile; (b) Resist side-wall.

(a)  ![Resist profile](image1)  
(b)  ![Resist side-wall](image2)

**Note:** Resist Thickness=1.97 µm. The profile of the resist side-wall is almost vertical. With the increase of development time to 60 seconds, an under-cut feature appears in the resist profile (see Figure 5).

Figure 8 Resist exposure time=5 seconds and development time=30 seconds (a) Resist profile; (b) Resist side-wall.

(a)  ![Resist profile](image3)  
(b)  ![Resist side-wall](image4)

**Note:** Resist Thickness=2.05 µm. The profile of the resist side-wall is almost vertical. With the increase of development time to 60 seconds, an under-cut feature appears in the resist profile (see Figure 6).