Master: Multilayer –Mother Machine

**Layer 1** is the smallest feature. For the thin chambers we do ( 0.4, 0.5, 0.6 ) μm, while for Mother machine we will do ( 0.4 0.5 ) μm.

**Layer 2** is the texture for the Main channel, which at 30 μm in height, they will be ~ 60 times bigger than layer 1.

Clean :

* ddH2O
* Acetone
* (Sonication, 10 min)
* Dehydration ( ***15*** *min* @ **120**°C )

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Spin 1 :

* ***Hlayer*** **1** = 1 μm , 0.8 μm
* Photoresistor: negative **Su-8 2000.5**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *height* |  | *Speed* | *ramp* | *Time* |
| all | 0° | 500 rpm | 1 | ***10 s*** |
| 0.5 um | 1° | 3000 rpm | 8 | ***30 s*** |
| 0.4 um | 2° | 4000 rpm | 8 | ***30 s*** |

Soft Bake 1 : ***1*** *min* @ **65°**C ***+ 1+1*** *min* @ **95°**C

Removal of Edge Bead = this will grant better contact between mask and wafer

Soft Bake 1 : ***1*** *min* @ **65°**C

Mask 1 Exposure 1 : E = **70** [mJ/cm^2]  ≈  ***1.8*** *s*

Post Bake 1 :

|  |  |  |
| --- | --- | --- |
| ***65****°C* | *ramp* | ***95****°C* |
| ***1 min*** | ***~ 2 min*** |

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* ***Hlayer*** **2** = about ***8 μm***
* Photoresistor: negative **Su-3010**

|  |  |  |  |
| --- | --- | --- | --- |
|  | *Speed* | *ramp* | *Time* |
| 0° | 500 rpm | 1 | ***10*** *s* |
| 1° | 3500 rpm | 8 | ***30*** *s* |

Soft Bake 2 : **1** min @ 65°C **+**  ***3*** *min* @ **95°**C **+**  **1** min @ 65°C

Edge Bead removal: thin stream of developer of the edge, while spinning at 750 rpm

Soft Bake 2 : ***~ 2*** min @ 65°C   
[allow reflow and drying, so that photoresistor is not steaky and it is easy to do mask alignment]

-------------- Allignment -----------------

Mask 2 Exposure 2 : E = **180** [mJ/cm^2]  ≈ ***4.3*** *s*

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Post Bake 2 :

|  |  |  |
| --- | --- | --- |
| ***65****°C* | *ramp* | ***95****°C* |
| ***1*** *min* | ***~3*** *min* |

Develop 2 : t = ***5*** *min*

Hard Baking : about ***20*** *min*  @ ***180°***C [ramp up, about 10 degrees per min, and down]