

# Fabrication of Permalloy films on silicon substrate

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# Material Considerations

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- Mask Size- 5 inch
- Wafer Size- 4 inch
- photoresist AE 5143
- Photoresist Thickness- 1um to 4um
- Thickness of Permalloy- 10nm to 1um

# Procedural Steps

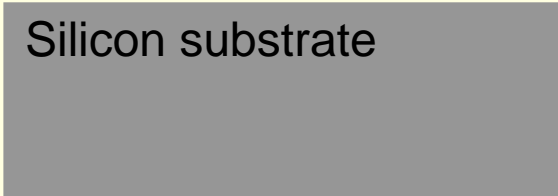
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- Singeing or Cleaning
- Photo-Lithography:
  - Coating
  - Pre-Bake
  - Exposure
  - Image Reversal
  - Development
- Sputtering
- Lift-off

# Cleaning

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- Place the wafer inside spinner
- Pour acetone on the wafer
- Blow dry the wafer after cleaning

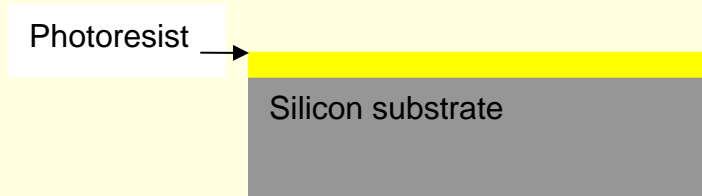


Silicon substrate

# Coating

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- Place the wafer inside spinner
- Pour photoresist
- Switch on vacuum
- Spin the wafer
- Check that there is no spikes



# Pre-Bake

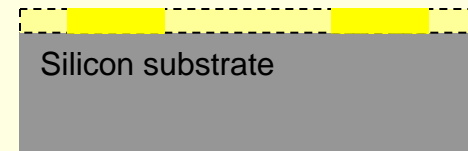
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- Use Hot Plate for this purpose
- Set the hot plate temperature to 90C
- Place the wafer on the hot plate
- Keep it for 60s by using a stop clock
- Remove the wafer and keep it aside for cooling it to room temperature

# Exposure

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- Oriel Aligner is used for this purpose
- Use the mask



# Post Bake

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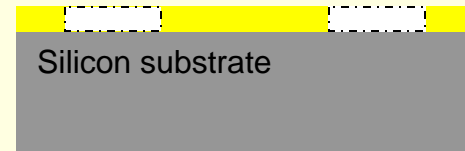
- Use Hot Plate for this purpose
- Set the hot plate temperature to 120C
- Place the wafer on the hot plate
- Keep it for 60s by using a stop clock
- Remove the wafer and keep it aside for cooling it to room temperature



# Development

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- Fill 1/3rd of a beaker with developer
- Place the wafer
- Rinse it with DI water in a flowing stream
- Blow dry the wafer with nitrogen or air after rinsing



# Etching

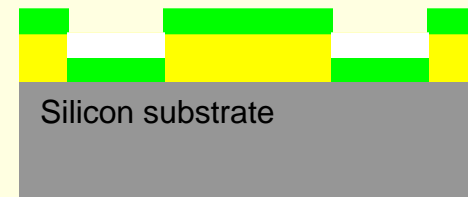
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- Load the chamber with the wafer and close it
- Close the vent and Switch on the vacuum and wait until it reaches to 0.3mT
- Set the time to 1min.
- Switch on the oxygen gas knob
- Press the start button

# Sputtering

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- Load the substrate and close the chamber



# Lift-off

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- Fill 1/3rd of a beaker with Acetone
- Place the wafer
- Ultrasonic vibrator

