Nanoimprint Lithography (NIL)
Imprinting

- A mold such as silicon dioxide (SiO$_2$) is imprinted onto a surface, that is a metal substrate covered with a resistive material such as polymethyl methacrylate (PMMA).
- The resistive material is heated above its glass transition temperature which allows the resistive material to become a thick liquid that can be easily pressed into any shape.
Imprinting

- MOLD
- RESIST
- SiO₂
- PMMA
- Metal Substrate
- SUBSTRATE
Imprinting

$\text{SiO}_2$

Metal Substrate
Etching

- An etching process such as reactive ion etching (RIE) is needed to complete the contrast between the resistive material and the metal substrate.
- RIE involves a gas that will react with the particular resistive material that will target the compressed areas of the resistive material.
Etching

Reactive Ion Etching

Metal Substrate
Conclusions

- This process leaves lines of PMMA which can then be used in applications for circuits and computing.
- This process is projected to have a minimum measurement of 10nm.
References