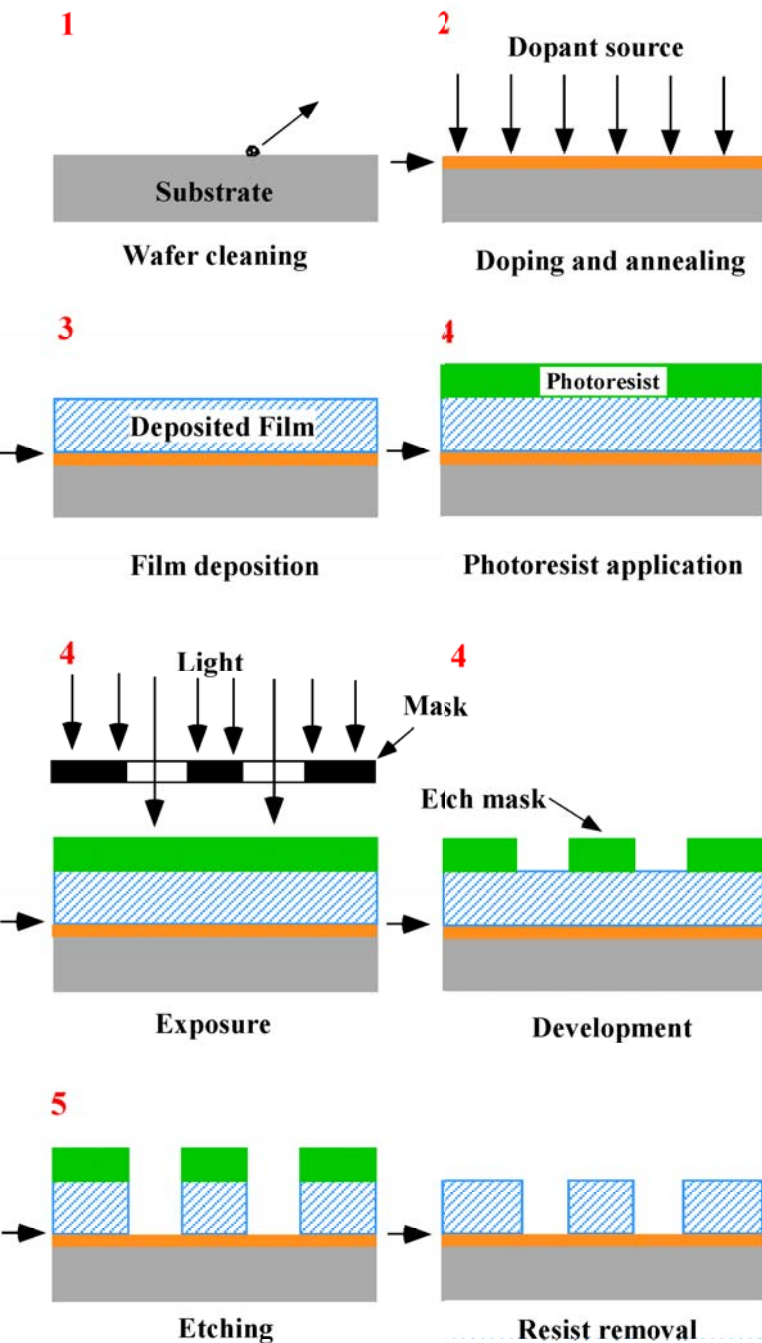


Nanofabrication - Overview



Shown at the left is a typical sequence of processing steps used in fabricating a micro- or nanostructure. It is based on the methods developed to fabricate silicon semiconductors and integrated circuits. While actual fabrication may involve many more steps and more complex processing, these illustrate some basic processes commonly used by our users to produce a wide variety of nanotechnology devices.

For the process shown at left, **wafer cleaning (1)** is done to remove all particles and contamination (which is repeated many times through the processing). Next **doping, diffusion, and annealing (2)** is done to change the electrical properties of the silicon surface region. **Deposition (3)** of a thin film, such as silicon dioxide, is then performed. **Lithography (4)** is done next which involves exposure of photoresist with light through a mask, and development. This produces a film of photoresist in the desired pattern on the surface. Next **etching (5)** of the deposited film is performed, which only occurs where there is no photoresist, followed by the removal of the resist. These steps can be repeated many times to produce different patterns of different films and layers on the substrate. Other topics described include: **E-beam lithography (6)**, **Gowning and Clean Rooms (7)**, **Measurements and Characterization (8)**, **Safety (9)**, and **Coral Software System (10)**.