CMOS Technology [w-e]

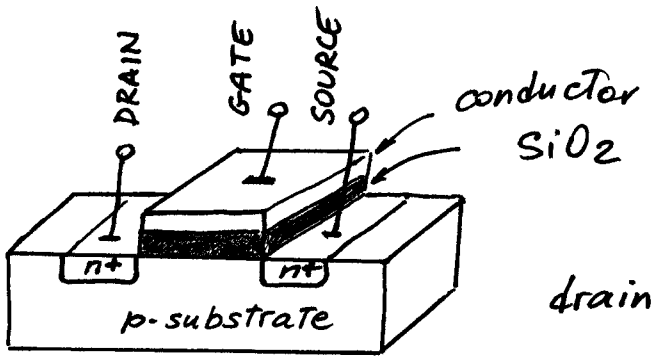
Complementary Metal Oxide Semiconductor (CMOS) is the main technology behind the boom of integrated circuit industry.

The MOS field transistor was proposed by LiLienfield in 1925.

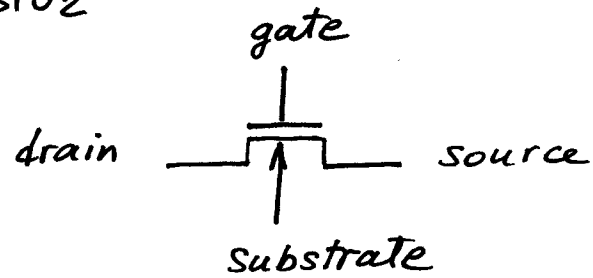
CMOS advantages { Low power
high level of integration

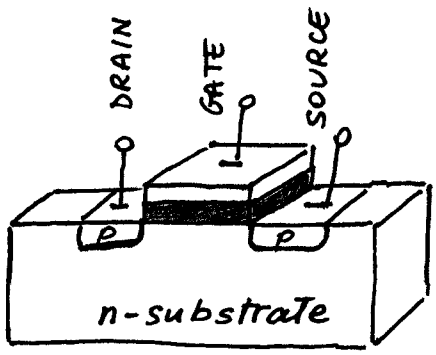
VLSI (very large scale integration) achievable through the use of CMOS technology makes possible to put a lot of functions on a single piece of silicon (possibly an entire system).
This increases the reliability of the system on the chip, and lowers the cost.

CMOS technology uses two types of MOS transistors:
p-type transistor (pMOS) and n-type transistor (nMOS).

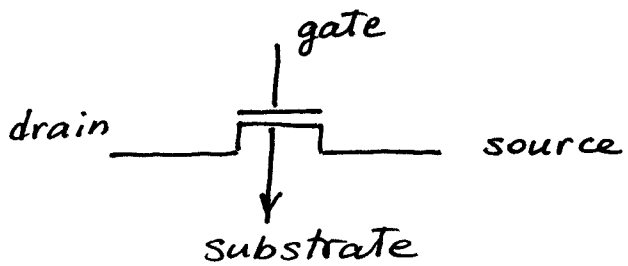


n-MOS transistor





p-MOS transistor



The fabrication of a MOS structure requires several chemical processing steps.

After those steps a typical MOS structure is composed by the overlapping of the following layers:

diffusion
insulator
polysilicon
metal

[see pictures taken from:
J.P. Uyemura
Physical Design of CMOS Integrated Circuits using L-EDIT
PWS Publishing Company, 1995]

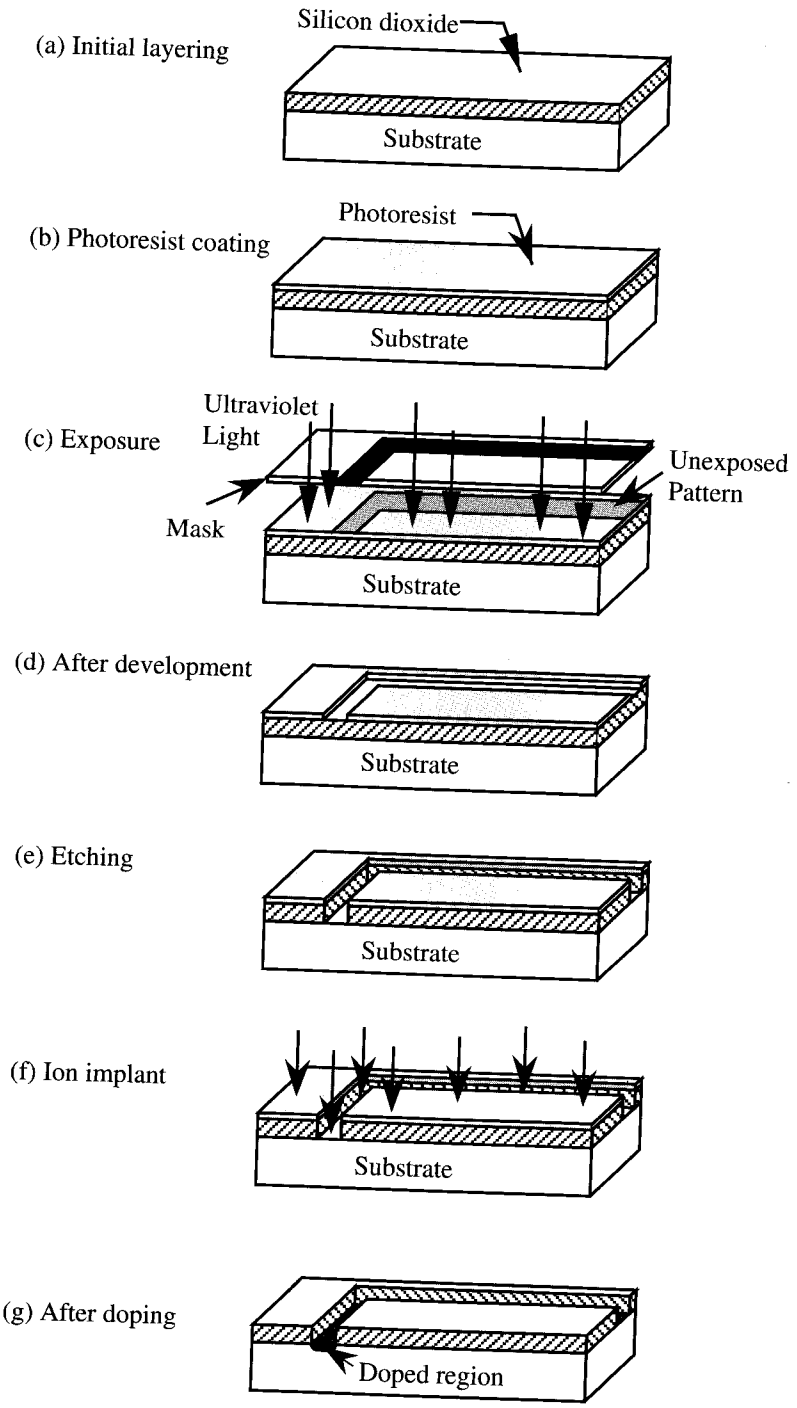


Figure 2.1. The basic lithographic sequence

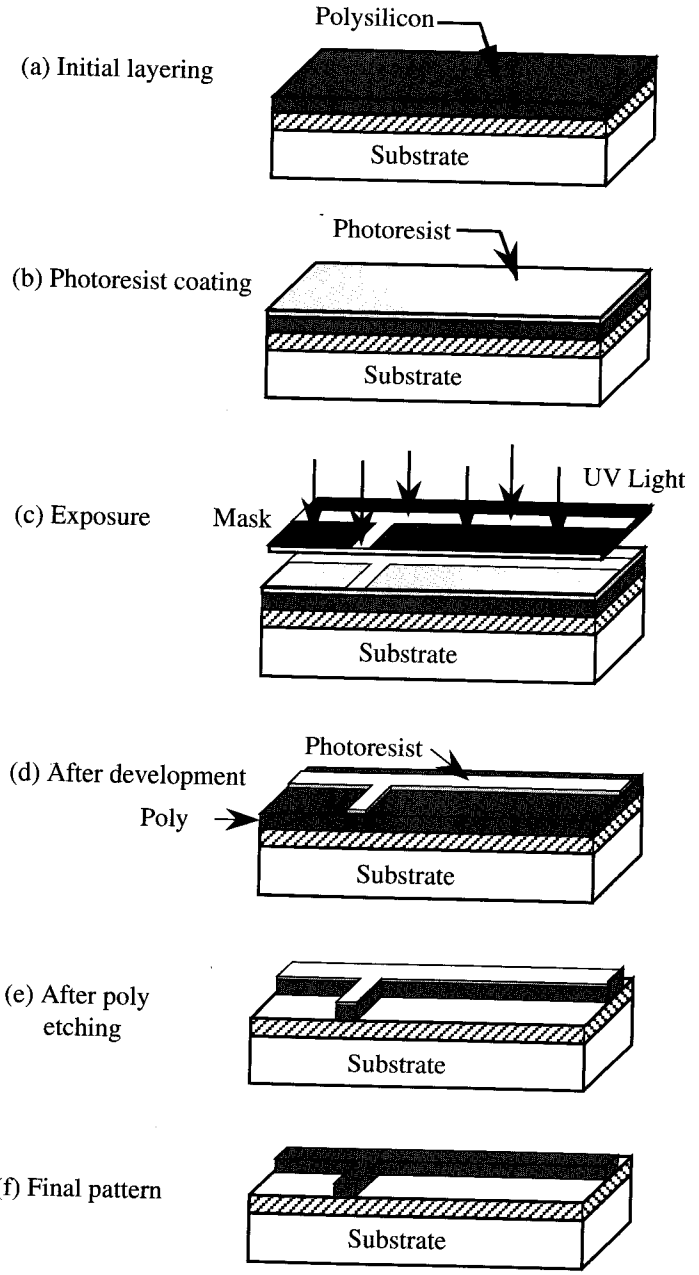


Figure 2.2. Poly patterning sequence