Ethanol issues

Fabrication

Usual flow (with exceptions)

Deposition

Conformality

How well does this film cover existing layers?

Selectivity

How much does it stick to the substrate?

Isotropy

Does the deposition happen uniformly in all directions?

KOH - etching

443m/1000ml @ 95°C

<100> direction 1.4y/min

<111> direction 3.5y/min

Ket plate

<100> direction 1.4y/min

<111> direction 3.5y/min

PR, Al, Ti, second.

Silicon - Etch:

Kef₂ - dry, room temp; vapor phase etch

Vapor phase etch... very selective, close to perfect selectivity

to: Al, SiO₂, photoresist...

mostly isotropic

HF - electrochemical, porous silicon, isotropic

NMA - HF, HNO₃, CH₃COOH

HF electrochemical - porous silicon

KOH, anisotropic, PD: 1 etch rate different in all three crystal directions

somewhat selective to Si₃N₄ - varies
NNA, XeF$_2$ - white solid @ room temp

Vapor pressure = 4 Torr sublimes

Pulse etcher w/ 4 valves

Acrylic

N$_2$

Etch

Pump

X

pressure

XeF$_2$

expand

dilute

etch

pump

XeF$_2$ EDP

1 0 0 1
0 1 0 1
0 0 1 0
0 0 1 1

or take

rows of holes

and put them on top of matching columns

crystal looks very different when looking at different faces

Tetrahedral bond

cubic crystal??

Silicon is a cubic crystal - Diamond lattice

109.47°

2.35 Å

5 x 10$^{22}$ at/cm$^3$

take Face Centered Cubic

cubic crystal??

2 copies offset along the diagonal 5x, P pitch

100 111

110

almost hex close pack did not quite