HW2 solutions
HW1 self-grade

Surface roughing
Stiction, dimples
Lift-off

MCNC Mumps -> MEMS Mumps, Poly Mumps
4200/cm², 15 slice, $100 each, thereafter 4x per year

Stiction - flat surfaces that come into contact often bond
- common problem w/ polysilicon devices
- many solutions/initiatives, but 1 early one was "dimples"

Lift-off - lithography - first process often used with gold (hard to etch)

Resistor
- evapo 0.5um Al, RIE
- lift-off
- spin, expose, develop, met evap 0.5um Cd/Au
- strip resist

Mumps process flow
3 mask
2 poly process

bare Si

LPCVD nitride 0.5um
LPCVD poly 0.5um / PLYO RIE
LPCVD oxide 2um / CONTACT RIE
LPCVD poly 2um / PLYO RIE
HF forever

PLYO CONTACT PLYO

Si3N4 - super tough, good dielectric
- electrically isolated contacts
- P1/P0 crossovers

Small anchors
X still no wiring crossover
everything shorted to substrate
a different 3 week, 2 poly process

base 5; water
LPCVD 2um SiO2
LPCVD 2um Poly/PLY1 RIE
LPCVD 1um SiO2/CZx RIE
LPCVD 2um Poly/PLY2 RIE
HF