

EE 143

Isolation Technologies

CTN

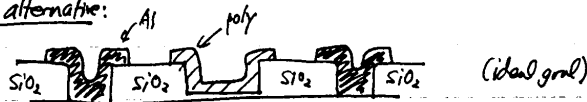
93

Isolation Technologies

LOCOS

- ⇒ Why?
- Must prevent inversion in the field regions.
 - LOCOS is used as opposed to other isolations because of its smooth topography.

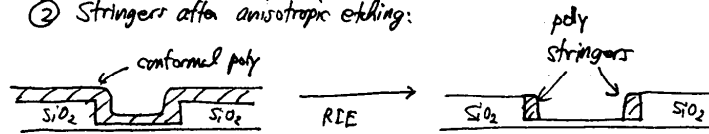
Consider the simplest alternative:



→ but in reality, topography will greatly limit what can be done

⇒ Some of the problems due to topography:

- ① Lithography: PR step coverage problems + stepper focusing
- ② Stringers after anisotropic etching:



- ③ Metal step coverage problems:



⇒ LOCOS solves all of these problems.

⇒ But LOCOS introduces several problems of its own: (at least conventional semi-recessed LOCOS does)

- ① Bird's beak encroachment into active areas: for 0.5-0.6 μm F.O. → 0.5 μm/side encroachment (thus, 1 μm features would disappear!)

