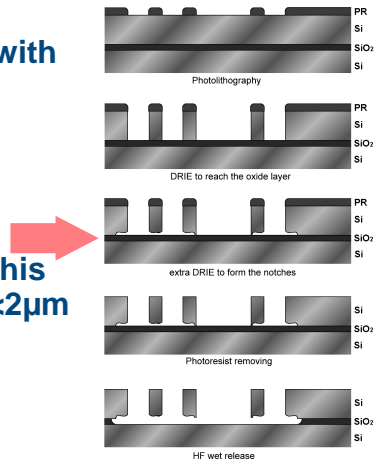


# Actuator fabrication

- Improved SOI/DRIE process with notching release

- PR mask patterning
- DRIE etching
- DRIE notching
- (Wet release)

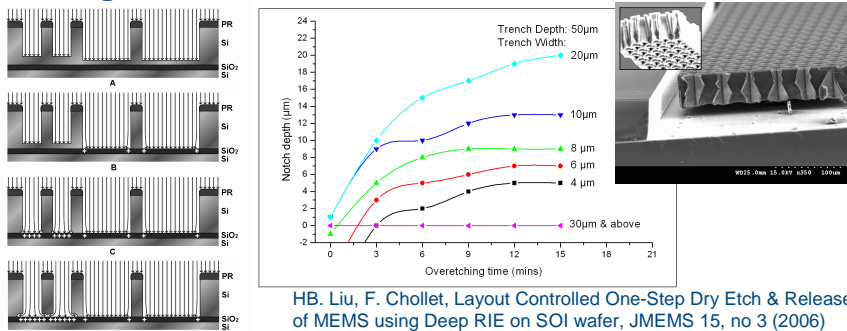
- High success yield even for this huge system (5x6 mm) with <math><2\mu\text{m}</math> springs



# Pattern dependent notching

- We found a dependency between notching in the DRIE and the width of trench pattern

- Largest notch achieved with trench A/R= 2



HB. Liu, F. Chollet, Layout Controlled One-Step Dry Etch & Release of MEMS using Deep RIE on SOI wafer, JMEMS 15, no 3 (2006)

## One-step dry etch & release

### ■ We developed a set of rules to optimize the release of our structure

A) For moving structure with large surface, use triangular mesh or other dense mesh with trench aspect ratio above 2 and proper line width

B) Avoid wide trench ( $A/R < 2$ ) adjacent to moving structure

C) Avoid wide moving beams.

D) Pay attention to the heat dissipation problem or take advantage of it.

