

Elasticity

- Agenda:
 - Elasticity
 - Force
 - Stress
 - Strain
 - Young's modulus
 - Shear modulus
 - Bulk modulus

- Reading: Senturia, Chapter 8, pp. 184-200.

➤ Process design issues

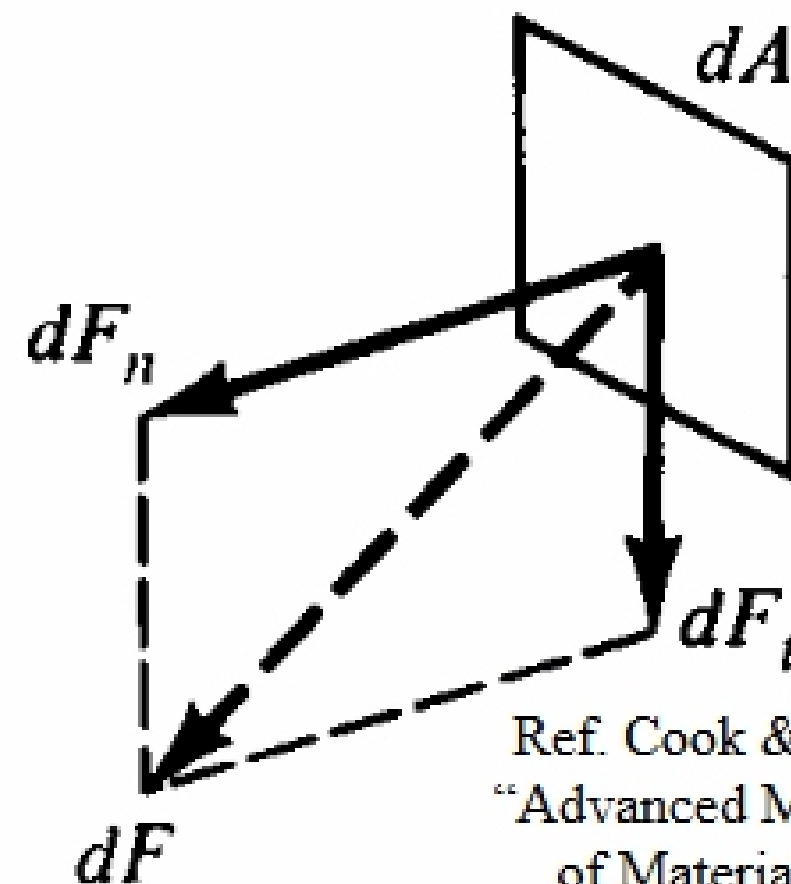
- Device geometry
- Backside processing
- System partitioning and packaging
- Process partitioning and contamination constraints
- Thermal constraints
- Material property control
- Process accuracy
- Alignment features
- Wafer architecture
- Die separation
- Packaging

Reading: Senturia p. 85-91

Simple Physics: $\vec{F} = M\vec{a}$; $[N = \text{kg}\cdot\text{m}/\text{s}^2]$

“Two-types of forces may act on a solid body”

- ↗ A **body force** is distributed over the volume of a body, example: gravity forces.
- ↗ A **surface force** is distributed over the surface of a body and can be further decomposed into...
 - Forces that act **normal** to a surface, example: hydrostatic pressure.
 - Forces that act **tangential** to a surface, example: shear stress



Ref. Cook & Young,
“Advanced Mechanics
of Materials”, p.2