



**MATERIALS SCIENCE
& ENGINEERING**
TEXAS A&M UNIVERSITY

Introduction to Materials Science & Engineering

Macroscopic Stress Strain Behavior

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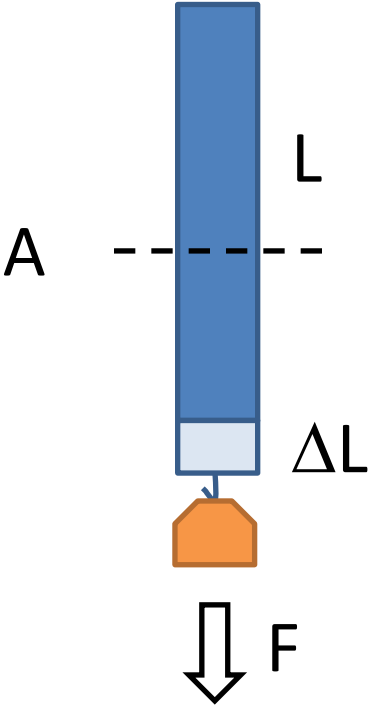


Stress & Strain

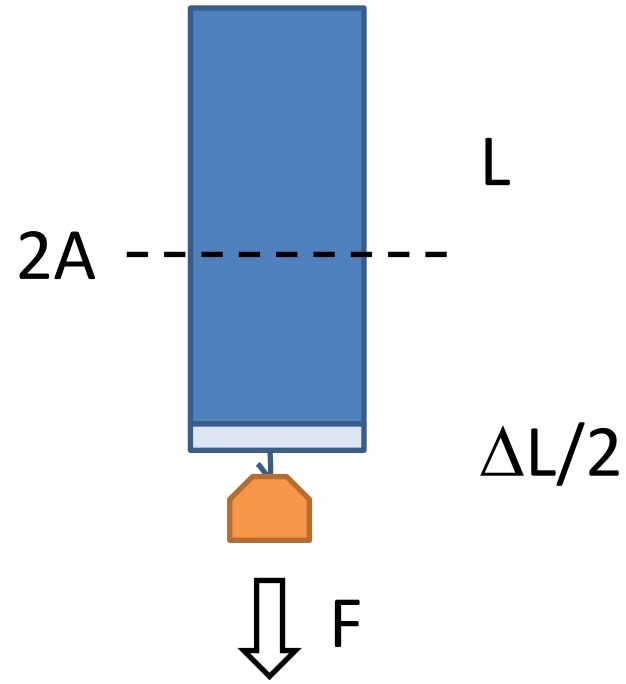
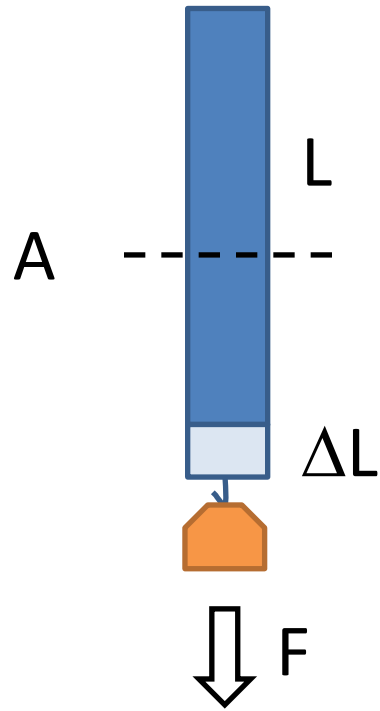


Tensile Test Specimens

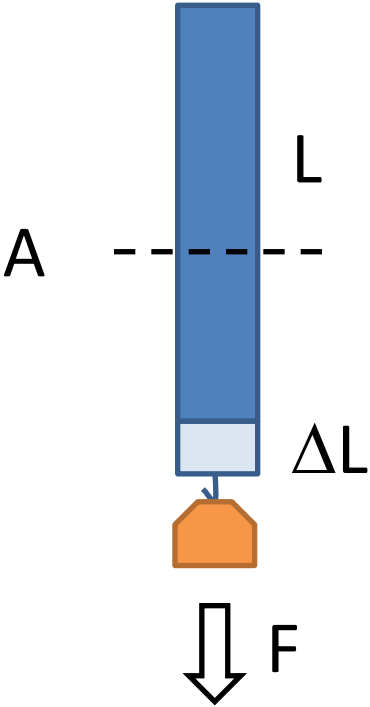
Intrinsic Material Properties (Geometry Independent)



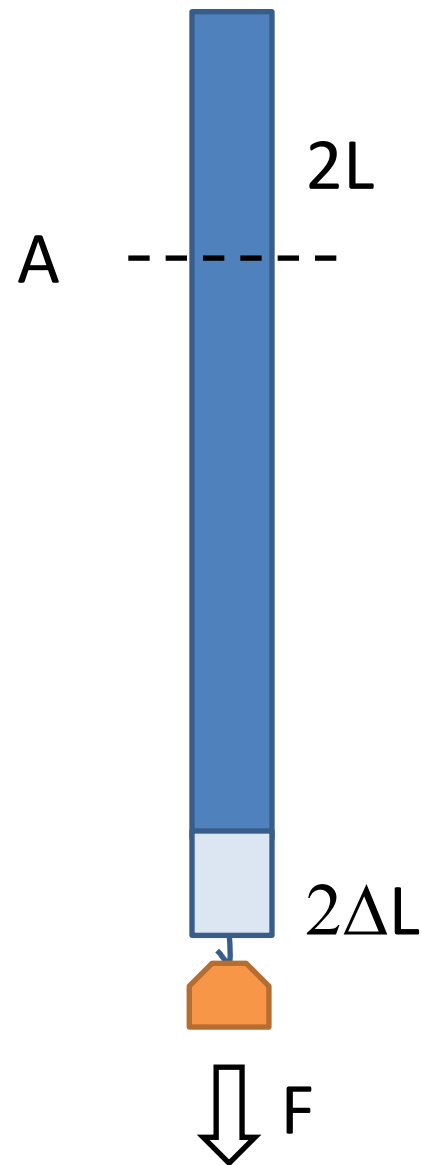
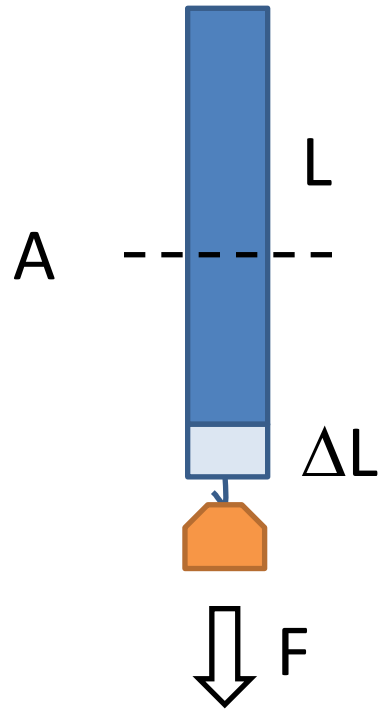
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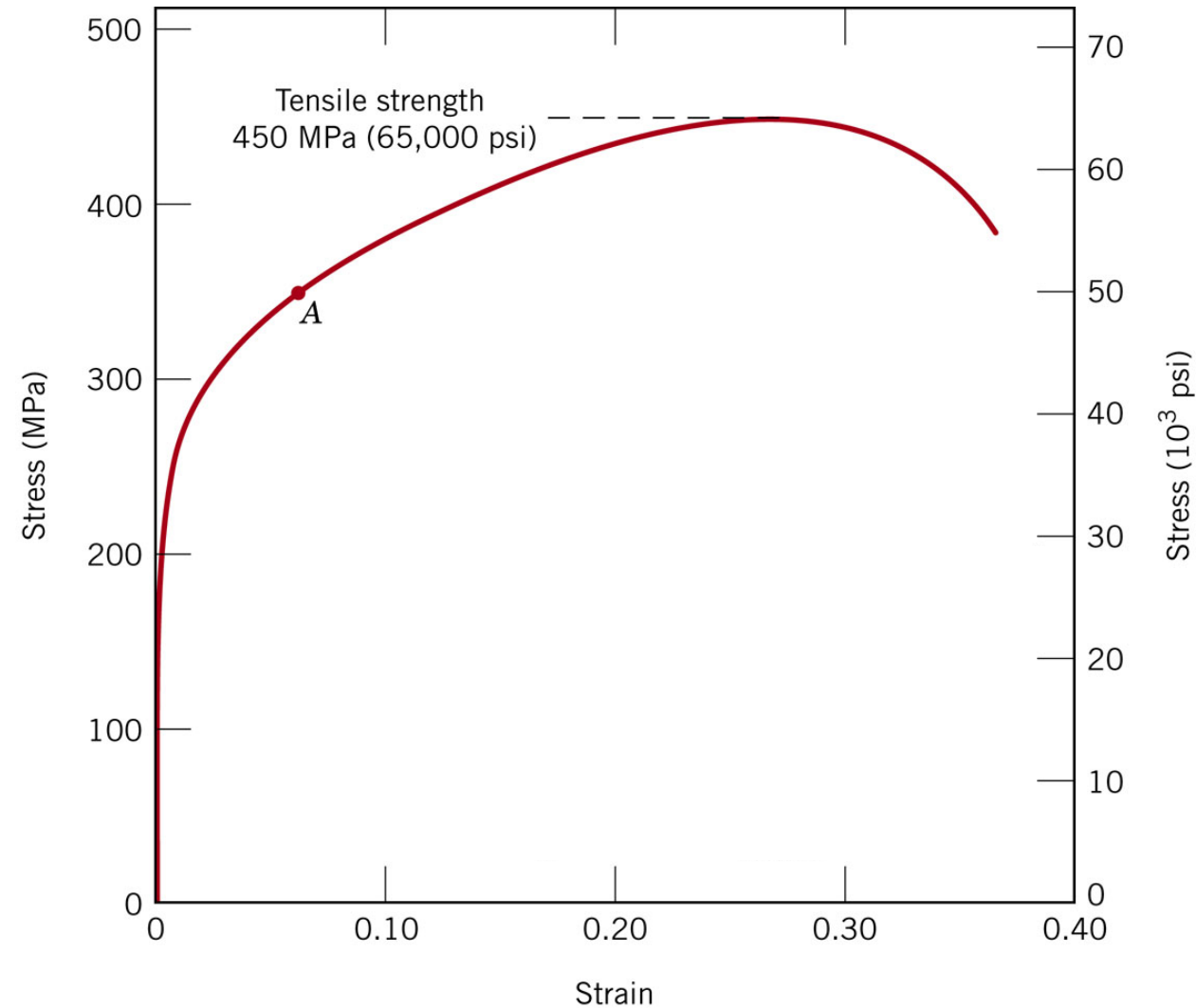
Intrinsic Material Properties (Geometry Independent)



Reading a stress-strain diagram

$$A = 1 \text{ mm}^2$$

$$L = 1 \text{ m}$$



Stress vs. Strain

- $\sigma = F/A$
- $\varepsilon = \Delta L/L$
- Reading σ/ε diagram

