

# Introduction to Hardness of Materials

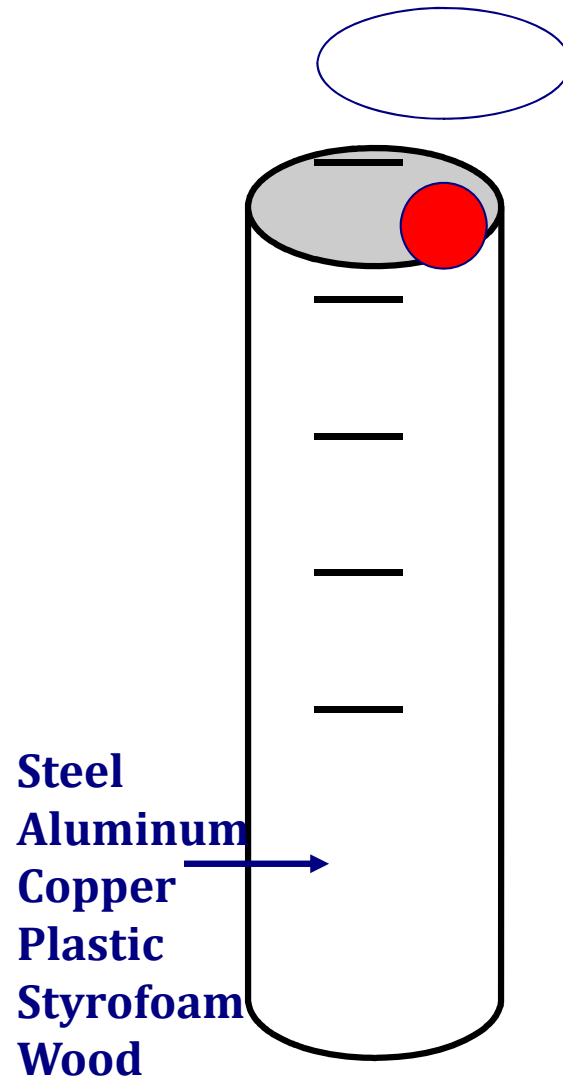
T. Stoebe and M. Palmer

MatEd National Resource Center for Materials  
Technology Education

# Simple Illustration

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- Rebound Hardness
  - Does Not Require Equipment
- Bounced Ball
  - Harder Material
  - Greater Height



# Key Concepts

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- Accuracy and Precision
  - How Well Can One Read Height
  - Emphasize Reproducibility
- Different Material Properties
  - Which Material Absorbs More Energy
- Careful Experimentation
  - Surface Roughness

# Experimental Analysis

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- Ask Students
  - What Constitutes a Difference in Properties?
  - How Many Inches or Fractions of an Inch is Significant?

**$4.5 \pm 0.5$  in**

**$4.0 \pm 0.8$  in**

**Rebound Hardness Correlates to both Elastic Modulus  
and to Strength**