

ENGR 240
Homework #1 Solution

1. Possible component properties might include stiffness, able to see through it, easy to bend, won't corrode, not brittle, stretchy, easy to paint, light, conducts electricity, hard, soft.....
- 2a. 2 moles of titanium, need to find how much volume it takes up (use atomic weight and density):

$$(2 \text{ mol}) \left(\frac{47.88 \text{ g}}{\text{mol}} \right) \left(\frac{\text{cm}^3}{4.51 \text{ g}} \right) = 21.23 \text{ cm}^3$$

A cube of this size has an edge length of $(21.23)^{1/3} = \mathbf{2.77 \text{ cm}}$

$$2b. \left(2 \text{ mol} \right) \left(\frac{6.02 \times 10^{23} \text{ atoms}}{\text{mol}} \right) = 1.20 \times 10^{24} \text{ Ti atoms}$$