



$$0.188 \text{ in} = 0.0047752 \text{ m} = d \text{ (diameter)}$$

$$2.1 \text{ in} = 0.05334 \text{ m} = L \text{ (length)}$$

$$h = 20 \text{ W/m}^2 \cdot \text{K}$$

$$Q_{\text{cond}} = \frac{K A (T_{\text{surrounding}} - T_{\text{capsule}})}{d}$$

$$K @ 300^\circ\text{C} = 16.4 \text{ W/m} \cdot \text{K}$$

$A = \text{area}$

$$Q_{\text{rad}} = \epsilon \cdot \sigma \cdot A (T_{\text{capsule}}^4 - T_{\text{surrounding}}^4) \quad \epsilon = 0.3$$

$$\sigma = 5.67 \cdot 10^{-8} \text{ W/(m}^2 \text{K}^4)$$

To find steady state Temperature of  $T_i$ :

Set  $Q_{\text{cond}} = Q_{\text{rad}}$  and solve for  $T_{\text{capsule}}$ ?