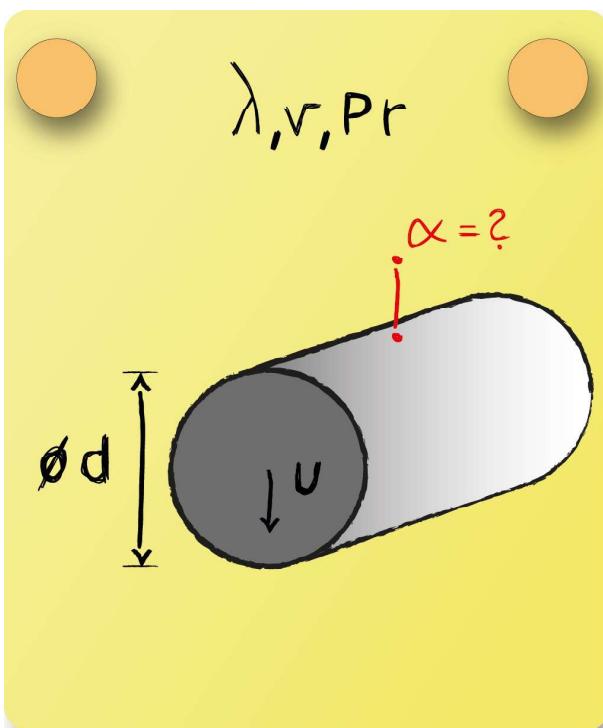


## Heat Transfer Correlation 5.4



A cylinder falls through a non-moving fluid. Calculate the mean heat transfer coefficient  $\bar{\alpha}$ .

Reynolds number:

$$\text{Re}_d = \frac{u \cdot d}{\nu} = 5.56$$



Nusselt number:

$$\text{Nu}_d = 0.911 \cdot \text{Re}_d^{0.385} \cdot \text{Pr}^{0.4} = 6.39$$

Heat transfer coefficient:

$$\bar{\alpha} = \frac{\text{Nu}_d \cdot \lambda_f}{d} = 70.27 \text{ W/m}^2\text{K}$$