# Heat Transfer Correlation 4.1
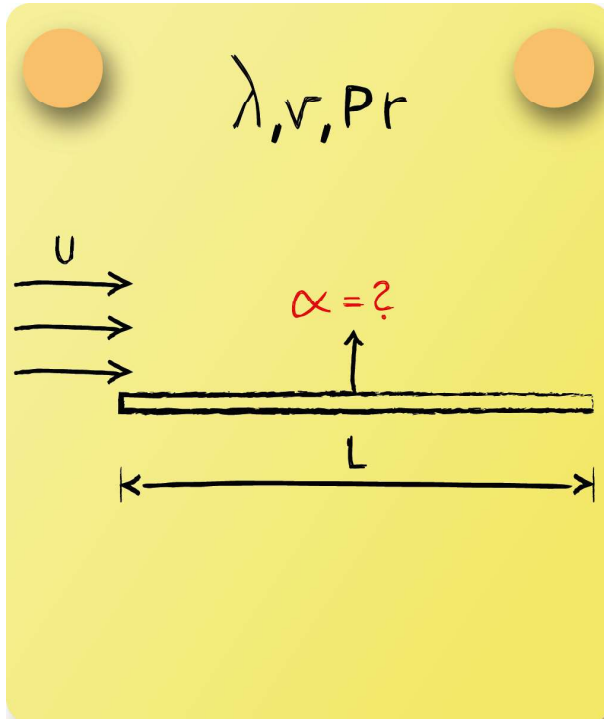


A fluid streams over a flat plate. Calculate the mean heat transfer coefficient $\bar{\alpha}$.

Reynolds number:

$$\mathrm{Re_L} = \frac{u \cdot L}{\nu} = 6.52 \cdot 10^5$$

Nusselt number:

$$\mathrm{Nu_L} = 0.036 \cdot \mathrm{Pr}^{0.43} \cdot \left(\mathrm{Re_L}^{0.8} - 9400\right) = 1.10 \cdot 10^3$$

Heat transfer coefficient:

$$\bar{\alpha} = \frac{\mathrm{Nu_L} \cdot \lambda_\mathrm{f}}{L} = 2.82 \ \mathrm{W/m^2K}$$