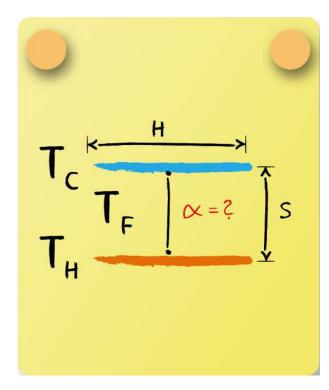


Heat Transfer Correlation 22.2



A gap between two horizontal plates is filled with an ideal gas. Calculate the mean heat transfer coefficient $\bar{\alpha}$ on the upper surface.

Coefficient of volume expansion for an ideal gas:

$$\beta = \frac{1}{T_{\rm F}} = 0.0031 \ {\rm K}^{-1}$$

And thus:



$$Gr_s \cdot Pr = \frac{g \cdot \beta \cdot (T_H - T_C) \cdot s^3}{\nu^2} \cdot Pr = 691.11$$

Nusselt number:

$$\overline{\mathrm{Nu_s}} = 1$$

Heat transfer coefficient:

$$\bar{\alpha} = \frac{\overline{\mathrm{Nu_s}} \cdot \lambda_{\mathrm{f}}}{s} = 6.73 \ \mathrm{W/m^2K}$$