

1.127

1.127 An open, clean glass tube, having a diameter of 3 mm, is inserted vertically into a dish of mercury at 20 °C. How far will the column of mercury in the tube be depressed?

$$h = \frac{2\sigma \cos\theta}{\gamma R} \quad (\text{Eq. 1.22})$$

For $\theta = 130^\circ$,

$$h = \frac{2 (4.66 \times 10^{-1} \frac{\text{N}}{\text{m}}) \cos 130^\circ}{(133 \times 10^3 \frac{\text{N}}{\text{m}^3})(0.0015 \text{ m})} = -3.00 \times 10^{-3} \text{ m}$$

Thus, column will be depressed 3.00 mm