TO what height does a liquid of density 0.4 into 10 raise to power 3 kg m/ cube and surface tension 0.05 N/m rise in a capillary tube of radius 0.2 mm when dipped in (given $\cos\gamma = 0.4$, g=10 m /s square)

**Solution**

The capillary force is in equilibrium with the gravitational force:

$$2\pi r\sigma\cos\gamma = \pi r^2 hg\rho,$$

where $r$ - radius of tube, $\sigma$ - surface tension, $\gamma$ - contact angle, $h$ - height of liquid, $g$ – acceleration of gravity, $\rho$ - density of liquid.

The height of liquid

$$h = \frac{2\sigma\cos\gamma}{g\rho r} = \frac{2 * 0.05\frac{\mathrm{N}}{\mathrm{m}} * 0.4}{10\frac{\mathrm{m}}{\mathrm{s}^2} * 0.4 * 10^3\frac{kg}{m^3} * 0.2 * 10^{-3}m} = 0.05\ m.$$

**Answer: $\mathbf{0.05\ m}$.**