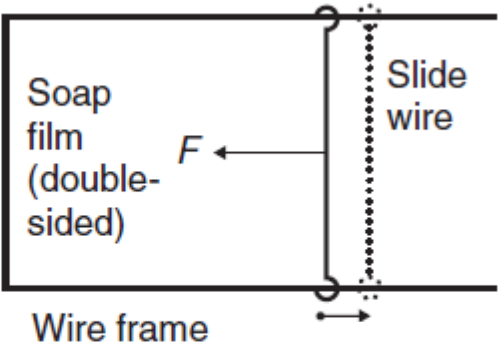


Calculate the work of extending a soap film supported in a wire frame by 1.5 cm^2 . The surface tension of the air-solution interface is $35 \text{ mN}\cdot\text{m}^{-1}$.

$$W_{ST} = \sigma \Delta A$$

We must remember that the soap film has two sides so the total increase in surface area is 3.0 cm^2 .

$$W_{ST} = 35 \times 10^{-3} \times 3 \times 10^{-4} = 105 \times 10^{-7} \text{ Nm} = 10.5 \mu\text{Nm} = 10.5 \mu\text{J}$$



Wire frame for extending the surface of a (double-sided) soap film.

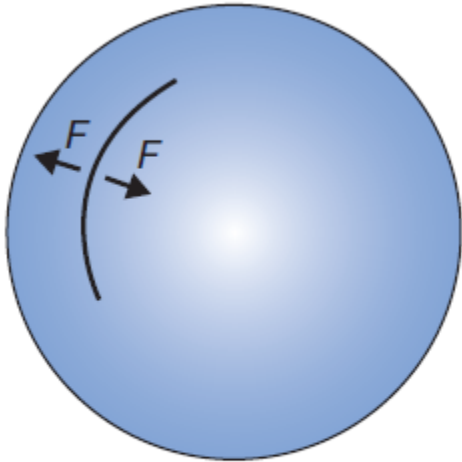


Fig. 2.3 The tension in the rubber acts on a line in the surface, causing it to stretch.

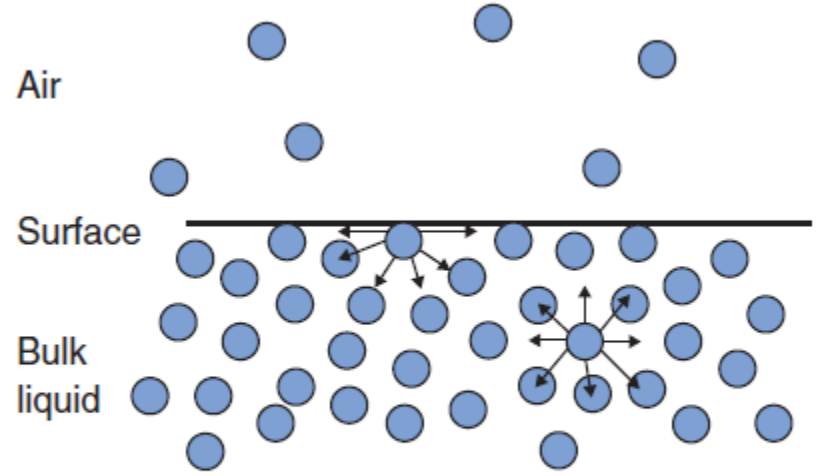


Fig. 2.4 Forces acting on molecules near a surface.