

Topic 3G - Liquids

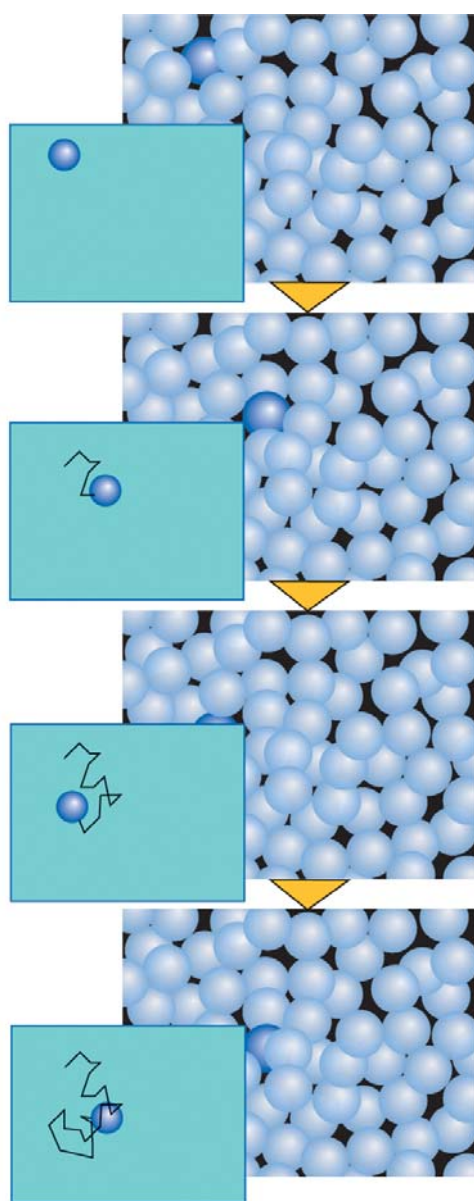


FIGURE 6.11 The structure of a liquid. Although the molecules (represented by the spheres in this series of diagrams) remain in contact with their neighbors, they can move away from one another and have enough energy to push through to a new neighborhood. Consequently, the entire substance is fluid. One sphere is slightly darker so that you can follow its motion. Its path is shown in the insets.

FIGURE 6.12 The viscosities of several liquids. Liquids composed of molecules that cannot form hydrogen bonds are generally less viscous than those that can form hydrogen bonds. Mercury is an exception: its atoms stick together by a kind of metallic bonding, and its viscosity is very high. The centipoise (cP) is the unit commonly used to report viscosity ($1 \text{ cP} = 10^{-3} \text{ kg}\cdot\text{m}^{-1}\cdot\text{s}^{-1}$).

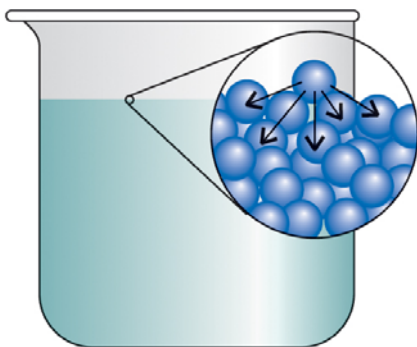
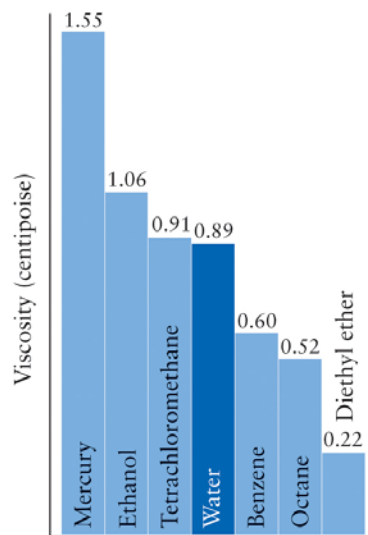


FIGURE 6.14 Surface tension arises from the attractive forces acting on the molecules at the surface. The inset shows that a molecule within the liquid experiences attractive forces from all directions, but a molecule at the surface experiences a net inward force.

TABLE 6.3 Surface Tensions of Liquids at 25 °C

Liquid	Surface tension, γ ($\text{mN}\cdot\text{m}^{-1}$)
benzene	28.88
carbon tetrachloride	27.0
ethanol	22.8
hexane	18.4
mercury	472
methanol	22.6
water	72.75
	58.0 at 100 °C