



Just as water is able to be in equilibrium with its vapor phase, it can also be in equilibrium with its solid phase. At the surface of an ice cube, a small portion of molecules will have the energy necessary to melt; at a constant temperature, these molecules will be in equilibrium with the solid phase.

If a solute interacts with water on the surface of the ice cube while it is in liquid form, the solute will dissolve and, due to its colligative effects, cause the freezing point of water to drop. Since melting is an endothermic process, if water is unable to freeze again, then the solute had the effect of lowering the temperature of the system.