

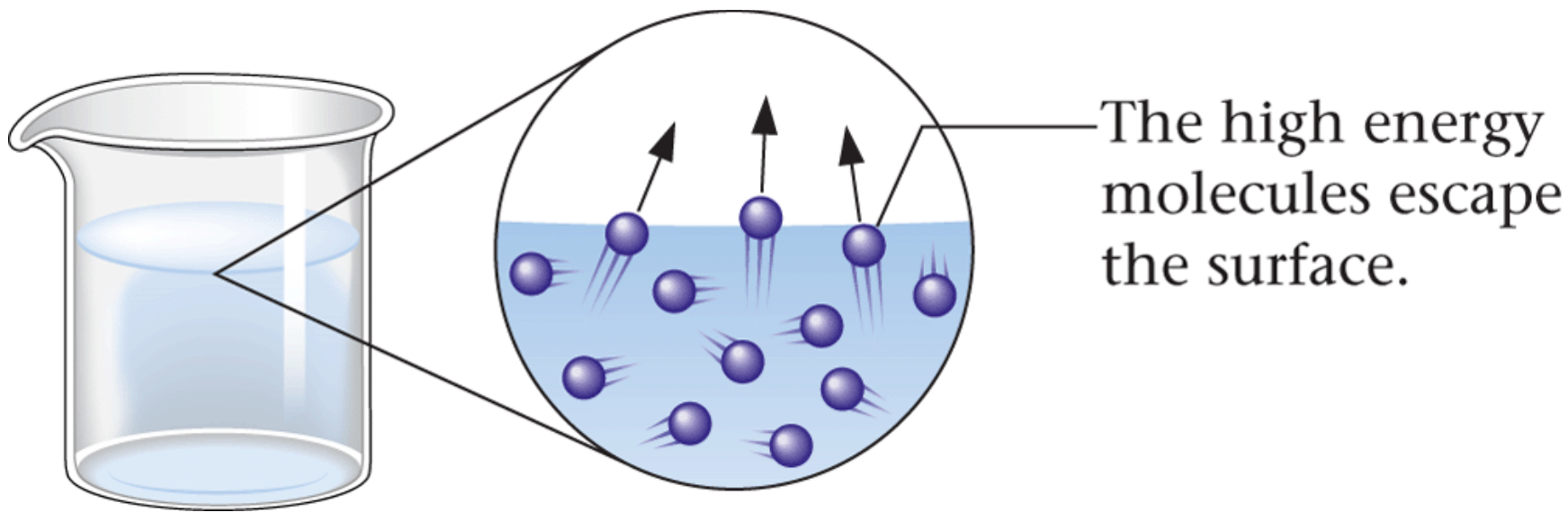
# Vapor Pressure and Boiling Point

## Objectives

1. To understand the relationship among vaporization, condensation and vapor pressure
2. To relate the boiling point of water to its vapor pressure

# Vapor Pressure and Boiling Point

## A. Evaporation and Vapor Pressure

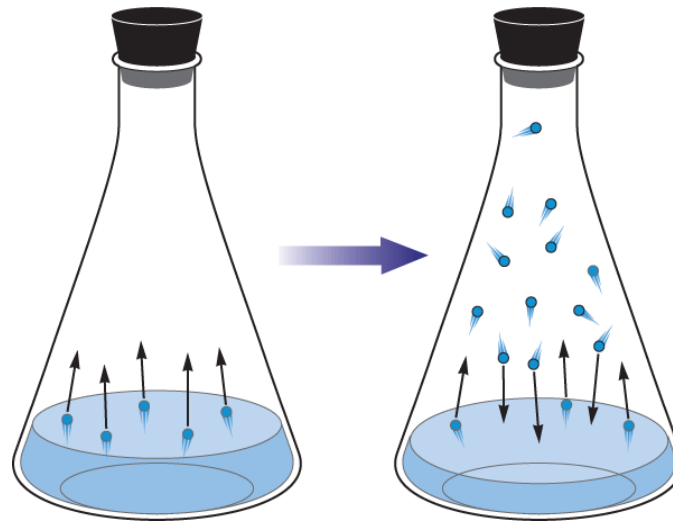


- Vaporization or evaporation
  - Endothermic

# Vapor Pressure and Boiling Point

## A. Evaporation and Vapor Pressure

### Vapor Pressure



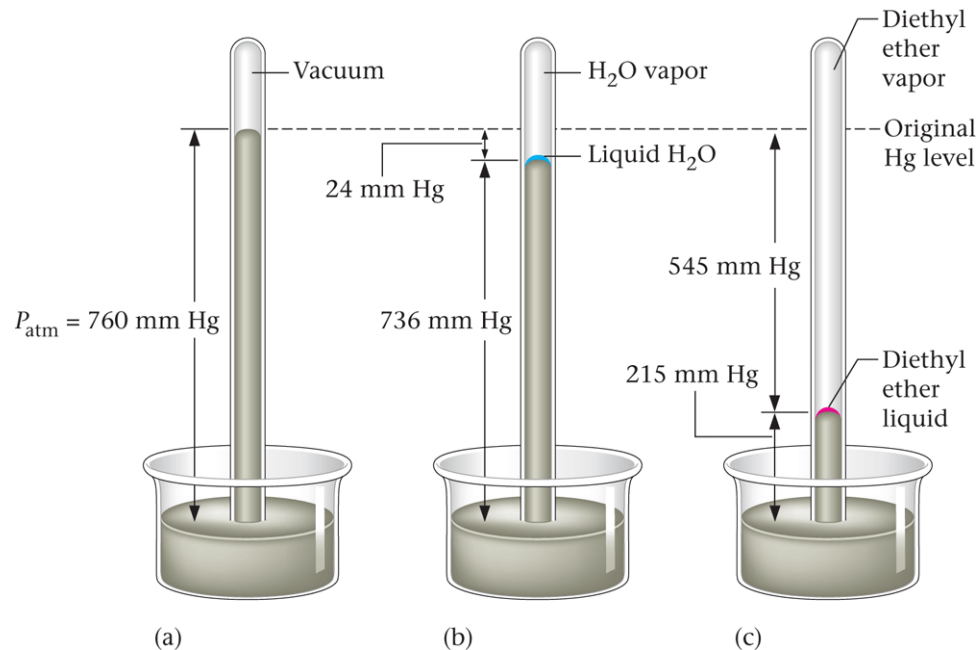
- Amount of liquid first decreases then becomes constant
- **Condensation** - process by which vapor molecules convert to a liquid
- When no further change is visible the opposing processes balance each other - **equilibrium**

# Vapor Pressure and Boiling Point

## A. Evaporation and Vapor Pressure

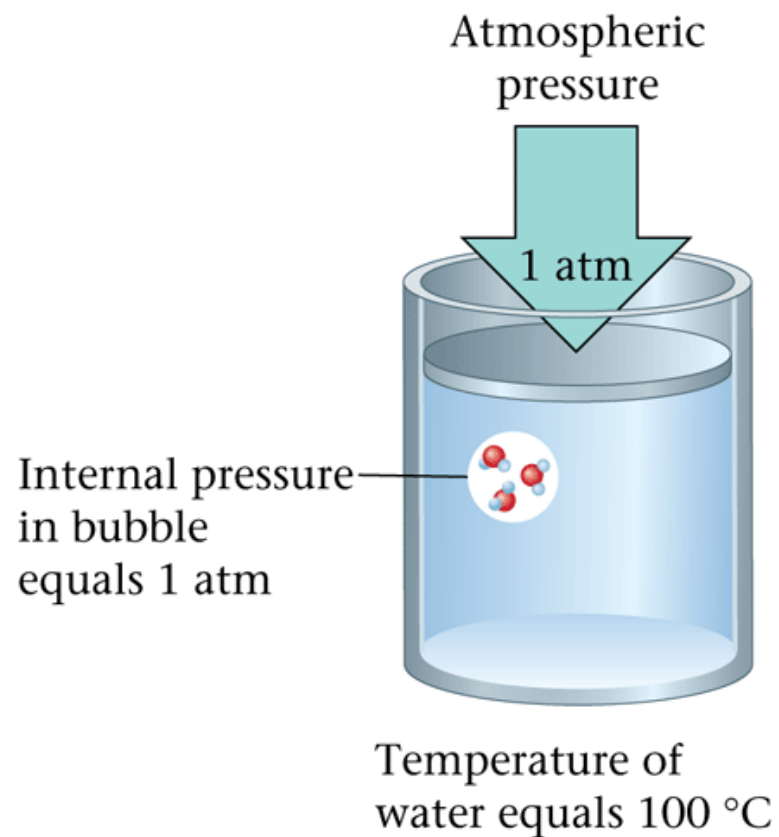
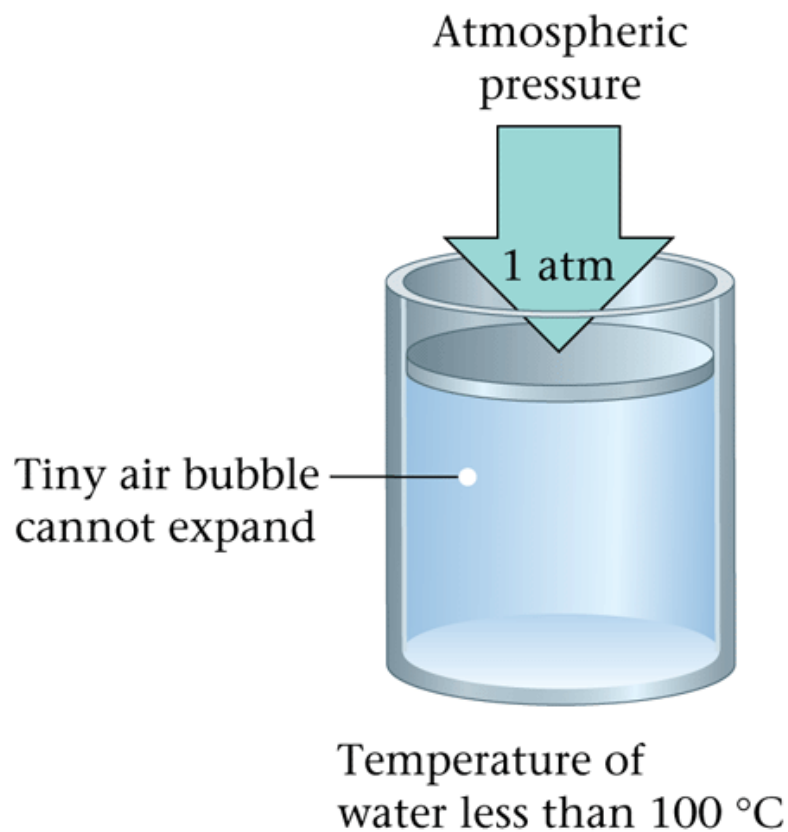
### Vapor Pressure

- **Vapor pressure** - pressure of the vapor present at equilibrium with its liquid
  - Vapor pressures vary widely - relates to intermolecular forces



# Vapor Pressure and Boiling Point

## B. Boiling Point and Vapor Pressure



## Vapor Pressure and Boiling Point

## B. Boiling Point and Vapor Pressure

Table 14.3

## Boiling Point of Water at Various Locations

Location	Feet Above Sea Level	$P_{\text{atm}}$ (atm)	Boiling Point ( $^{\circ}\text{C}$ )
Top of Mt. Everest, Tibet	29,028	0.32	70
Top of Mt. McKinley, Alaska	20,320	0.45	79
Top of Mt. Whitney, California	14,494	0.57	85
Top of Mt. Washington, New Hampshire	6,293	0.78	93
Boulder, Colorado	5430	0.80	94
Madison, Wisconsin	900	0.96	99
New York City, New York	10	1.00	100
Death Valley, California	-282	1.01	100.3