

## Appendix C

### *Useful Constants and Conversions*

#### Constants:

Proton mass	$m_p$	$1.673 \times 10^{-27} \text{ kg}$
Electron mass	$m_e$	$9.109 \times 10^{-31} \text{ kg}$
Fundamental charge	$e$	$1.602 \times 10^{-19} \text{ C}$
Speed of light	$c$	$2.998 \times 10^8 \text{ m/s}$
Planck's constant	$h$	$6.626 \times 10^{-34} \text{ J}\cdot\text{s}$
Boltzmann's constant	$k_B$	$1.381 \times 10^{-23} \text{ J/K}$
Ideal gas constant	$R$	$8.314 \text{ J/mol}\cdot\text{K}$
Avogadro's number	$N_A$	$6.022 \times 10^{23}$
Stefan –Boltzmann Constant	$\sigma_B$	$5.670 \times 10^{-8} \text{ W/m}^2\text{K}^4$

#### Conversions:

##### Mass

$$\text{Atomic Mass Unit} \quad 1 \text{ u} = 1.660 \times 10^{-27} \text{ kg}$$

##### Volume

$$1000 \text{ L} = 1 \text{ m}^3$$

$$1000 \text{ cm}^3 = 1 \text{ L}$$

##### Energy

Kilowatt hour	$1 \text{ kWh} = 3.6 \times 10^6 \text{ J}$
Thermochemical Calorie	$1 \text{ cal} = 4.184 \text{ J}$ (see also Chapter 6)
Electronvolt	$1 \text{ eV} = 1.602 \times 10^{-19} \text{ J}$
British thermal unit	$1 \text{ Btu} = 1054 \text{ J}$

##### Pressure

Pascal	$1 \text{ Pa} = 1 \text{ N/m}^2$
Atmosphere	$1 \text{ atm} = 1.013 \times 10^5 \text{ Pa}$

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