

# Glossary

## Fundamental Constants (the values for $c_0$ , $\mu_0$ and $g_n$ are assigned by definition)

$N_A$	Avogadro constant	$6.0221367 \times 10^{23} \text{ mol}^{-1}$
$m_p$	proton rest mass	$1.6726231 \times 10^{-27} \text{ kg}$
$m_e$	electron rest mass	$9.1093897 \times 10^{-31} \text{ kg}$
$e$	elementary charge	$1.60217733 \times 10^{-19} \text{ C}$
$F = N_A e$	Faraday constant	$96485.309 \text{ C mol}^{-1}$
$h$	Planck constant	$6.6260755 \times 10^{-34} \text{ J s}$
$\hbar = h/(2\pi)$		$1.05457266 \times 10^{-34} \text{ J s}$
$c_0$	speed of light in vacuum	$2.99792458 \times 10^8 \text{ m s}^{-1}$
$k$	Boltzmann constant	$1.380658 \times 10^{-23} \text{ J K}^{-1}$
$R = N_A k$	gas constant	$8.314510 \text{ J K}^{-1} \text{ mol}^{-1}$
$\mu_0$	permeability of vacuum	$4\pi \times 10^{-7} \text{ H m}^{-1}$
$\epsilon_0 = 1/(\mu_0 c_0^2)$	permittivity of vacuum	$8.854187816 \times 10^{-12} \text{ C}^2 \text{ J}^{-1} \text{ m}^{-1}$
$a_0 = \frac{\epsilon_0 \hbar^2}{\pi m_e e^2}$	Bohr radius	$0.529177249 \times 10^{-10} \text{ m}$
$\mu_B = \frac{e\hbar}{4\pi m_e}$	Bohr magneton	$9.2740154 \times 10^{-24} \text{ J T}^{-1}$
$\mu_N = \frac{m_e}{m_p} \mu_B$	nuclear magneton	$5.0507866 \times 10^{-27} \text{ J T}^{-1}$
$g_n$	standard acceleration of free fall	$9.80665 \text{ m s}^{-2}$

### Useful Notations

1 eV corresponds to  $96.48 \text{ kJ mol}^{-1} = 23.05 \text{ kcal mol}^{-1}$ , or to the energy of a quantum of light of wavelength 1240 nm or wavenumber  $8065 \text{ cm}^{-1}$ .

$0^{\circ}\text{C}$  corresponds to 273.15 K,  $100^{\circ}\text{C}$  corresponds to 373.15 K.

Molar volume of ideal gas at 1 bar,  $0^{\circ}\text{C}$ :  $22.71108 \text{ L mol}^{-1}$ .

ångstrom ( $\text{Å}$ ) =  $10^{-10} \text{ m}$ ;  $\text{m s}^{-1}$  = (millisecond) $^{-1}$ ;  $\text{m s}^{-1}$  = meters per second.