

Physical constants

a_B	$= 0.5292 \text{ \AA}$	Bohr radius	$(a_B = 0.5292 \times 10^{-10} \text{ m})$
ϵ_0	$= 8.8542 \times 10^{-12} \text{ As/(Vm)}$	absolute dielectric constant	
e	$= 1.6022 \times 10^{-19} \text{ C}$	elementary charge	
c	$= 2.9979 \times 10^8 \text{ m/s}$	velocity of light in vacuum	
E_{Ryd}	$= 13.606 \text{ eV}$	Rydberg energy	
g	$= 9.8067 \text{ m/s}^2$	acceleration on earth at sea level due to gravity	
G	$= 6.6873 \times 10^{-11} \text{ m}^3/(\text{kg s}^2)$	gravitational constant	$(F = G M m / r^2)$
h	$= 6.6261 \times 10^{-34} \text{ Js}$	Planck constant	$(h = 4.1356 \times 10^{-15} \text{ eVs})$
\hbar	$= 1.0546 \times 10^{-34} \text{ Js}$	$\hbar = h/(2\pi)$	$(\hbar = 6.5821 \times 10^{-16} \text{ eVs})$
k	$= 1.3807 \times 10^{-23} \text{ J/K}$	Boltzmann constant	$(k = 8.6175 \times 10^{-5} \text{ eV/K})$
μ_0	$= 1.2566 \times 10^{-6} \text{ Vs/(Am)}$	absolute magnetic constant	
m_e	$= 9.1094 \times 10^{-31} \text{ kg}$	free electron mass	
N_{Avo}	$= 6.0221 \times 10^{23} \text{ mol}^{-1}$	Avogadro number	
$R = k N_{\text{Avo}}$	$= 8.3145 \text{ J K}^{-1} \text{ mol}^{-1}$	ideal gas constant	

Note:

The *dielectric permittivity* of a material is given by $\epsilon = \epsilon_r \epsilon_0$ where ϵ_r and ϵ_0 are the *relative* and *absolute* dielectric permittivity, respectively.

The *magnetic permeability* of a material is given by $\mu = \mu_r \mu_0$ where μ_r and μ_0 are the *relative* and *absolute* magnetic permeability, respectively.

Useful conversions

$$\begin{aligned}
 1 \text{ eV} &= 1.6022 \times 10^{-19} \text{ C V} = 1.6022 \times 10^{-19} \text{ J} \\
 E &= h\nu = hc/\lambda = 1239.8 \text{ eV} / (\lambda/\text{nm}) \\
 kT &= 25.86 \text{ meV} \quad (\text{at } T = 300 \text{ K}) \\
 kT &= 25.25 \text{ meV} \quad (\text{at } T = 20 \text{ }^\circ\text{C} = 293.15 \text{ K})
 \end{aligned}$$