

Appendix 2: Physical constants

Avogadro's number	N_A	6.022×10^{23} atoms per mole
Bohr radius	a_0	52.9177 picometer 0.529177 Angstrom
Boltzmann's constant	k	1.38×10^{-23} Joule/Kelvin 8.62×10^{-5} electron Volt/Kelvin
Electronic charge	q	1.602×10^{-19} Coulomb
Free electron rest mass	m_0	9.11×10^{-31} kilogram 5.69×10^{-16} eV s ² cm ⁻²
Permeability of vacuum	μ_0	$4\pi \times 10^{-7}$ Henry/meter
Permittivity of vacuum	ϵ_0	8.854×10^{-12} Farad/meter 8.854×10^{-14} Farad/centimeter
Planck's constant	h	6.625×10^{-34} Joule second 4.134×10^{-15} electron Volt second
Reduced Planck's constant	$\hbar$	1.054×10^{-34} Joule second
Proton rest mass	M	1.67×10^{-27} Kilogram
Rydberg constant	R	2.17991×10^{-18} Joule 13.6058 electron Volt
Speed of light in vacuum	c	2.998×10^8 meter/second 2.998×10^{10} centimeter/second
Thermal voltage (at T = 300 K)	$V_t = \frac{kT}{q}$	25.86 milliVolt