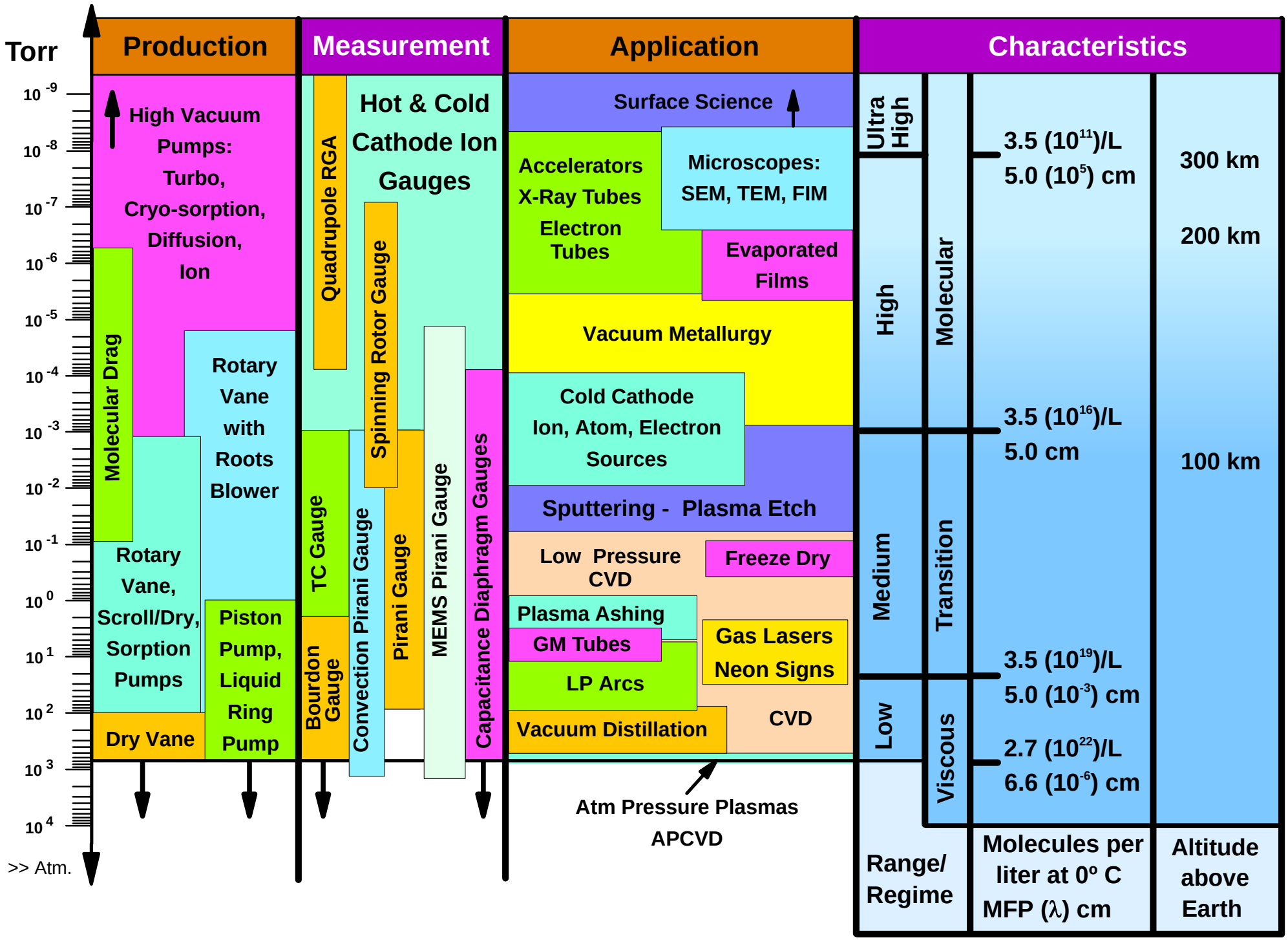
Torr
Production
Measurement
Application
Characteristics
10 -9
10 -8
10 -7
10 -6
10 -5
10 -4
10 -3
10 -2
10 -1
10 0
10 1
10 2
10 3
10 4
>> Atm.
High Vacuum Pumps: Turbo, Cryo-sorption, Diffusion, Ion
Molecular Drag
Rotary Vane with Roots Blower
Rotary Vane, Scroll/Dry, Sorption Pumps
Piston Pump, Liquid Ring Pump
Dry Vane
Quadrupole RGA
Hot & Cold Cathode Ion Gauges
Spinning Rotor Gauge
TC Gauge
Bourdon Gauge
Convection Pirani Gauge
Pirani Gauge
MEMS Pirani Gauge
Capacitance Diaphragm Gauges
Surface Science
Accelerators X-Ray Tubes Electron Tubes
Microscopes: SEM, TEM, FIM
Evaporated Films
Vacuum Metallurgy
Cold Cathode Ion, Atom, Electron Sources
Sputtering - Plasma Etch
Low Pressure CVD
Freeze Dry
Plasma Ashing
GM Tubes
Gas Lasers Neon Signs
LP Arcs
CVD
Vacuum Distillation
Atm Pressure Plasmas APCVD
Ultra High
High
Medium
Low
Molecular
Transition
Viscous
3.5 (10^11)/L
5.0 (10^5) cm
3.5 (10^16)/L
5.0 cm
3.5 (10^19)/L
5.0 (10^-3) cm
2.7 (10^22)/L
6.6 (10^-6) cm
300 km
200 km
100 km
Range/ Regime
Molecules per liter at 0º C MFP (λ) cm
Altitude above Earth