Bare Metal Assembly Programming

- Input Tests

Please send corrections (or suggestions) to youngwlim@hotmail.com.

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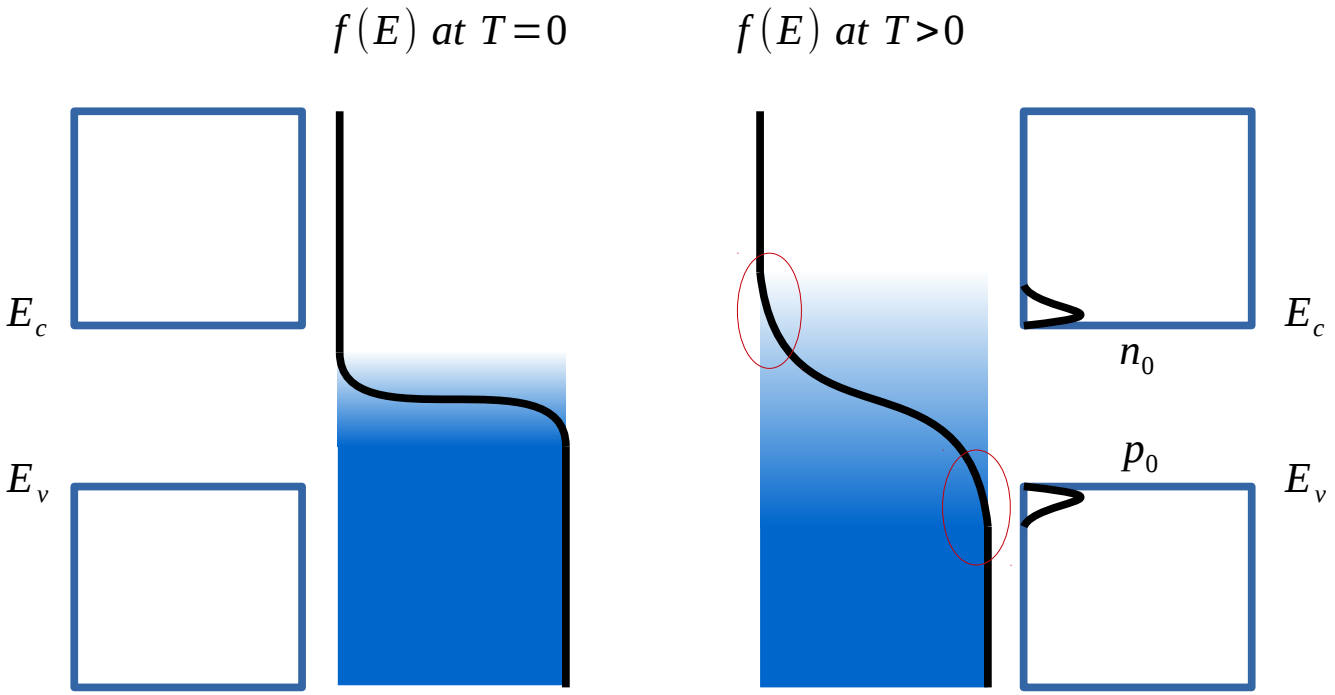
Fermi-Dirac Distribution Function



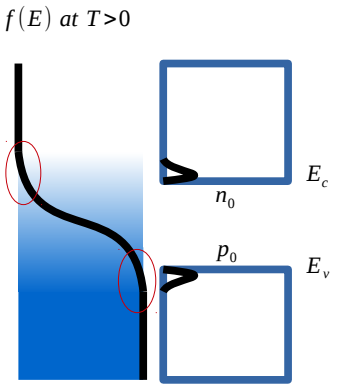
$$f(E) = \frac{1}{1+e^{(E-E_c)/kT}}$$

Fermi-Dirac distribution function

The probability that
an available energy state at E
will be occupied by an electron
at absolute temperature K

Electron Concentration

$$n_0 = \int_{E_c}^{\infty} f(E) N(E) \, dE$$



n_0 : the electron concentration at the equilibrium condition

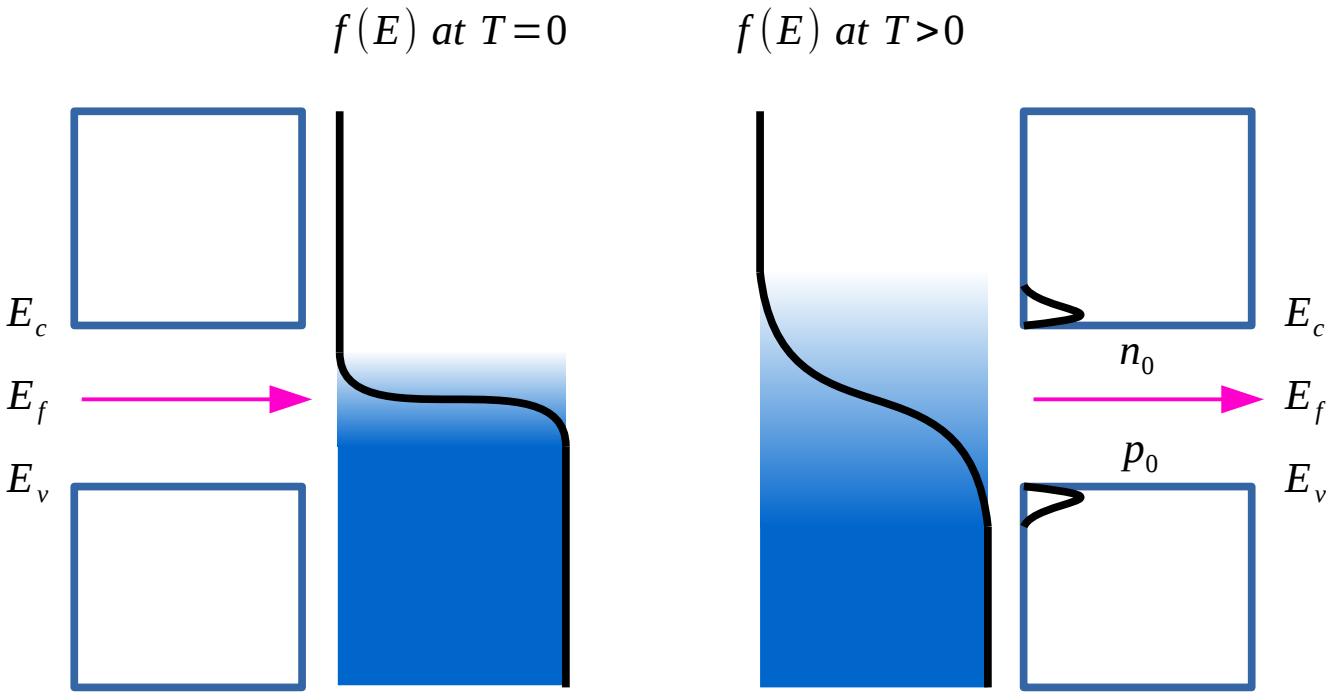
N(E) dE : the density of states in the energy range *dE*

f(E) : the probability of occupancy

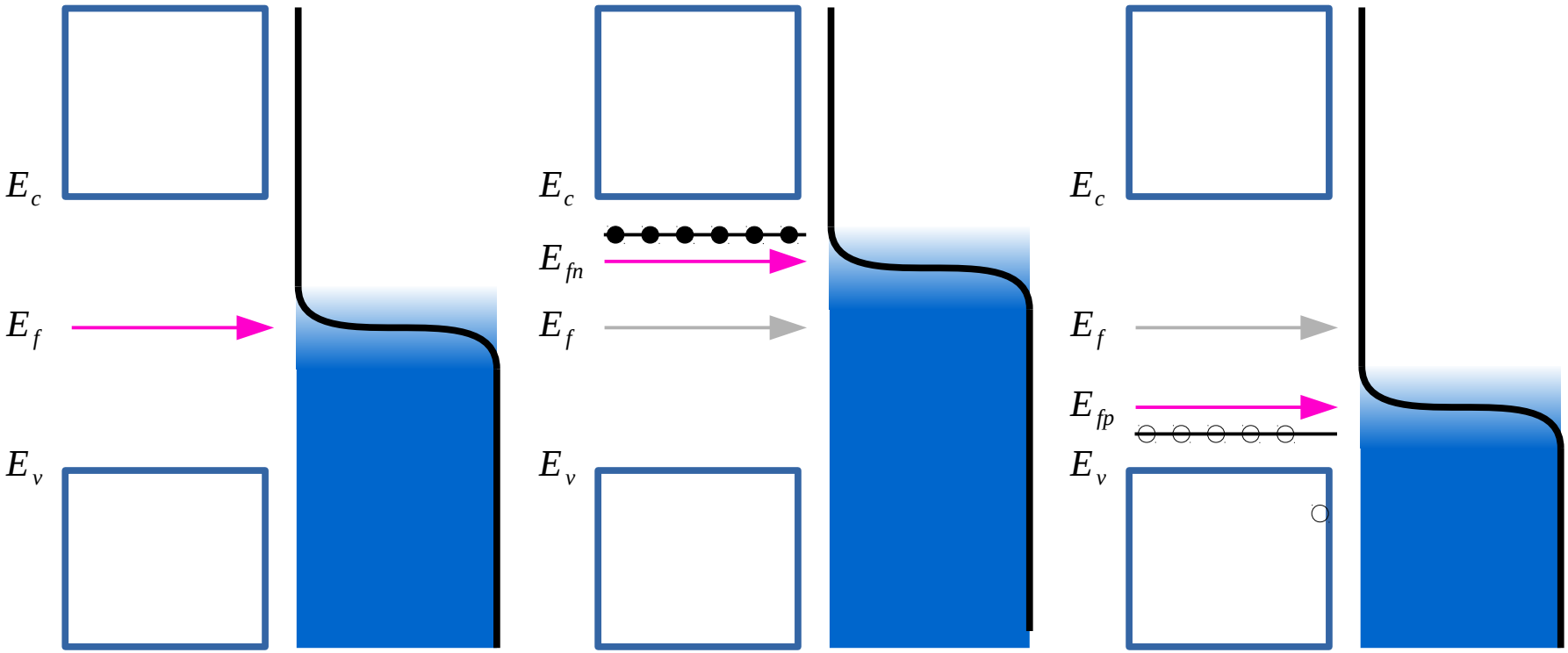
$$f(E) = \frac{1}{1 + e^{(E - E_c)/kT}}$$

N(E) : the density of electron states *determined from quantum mechanics and Pauli's exclusion principle*

Thermal Energy



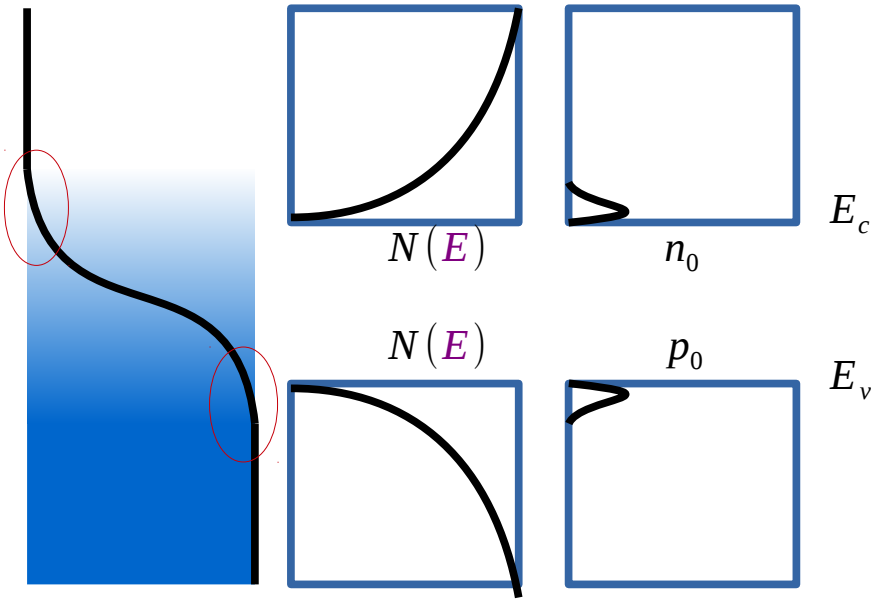
Fermi Levels



intrinsic donor acceptor

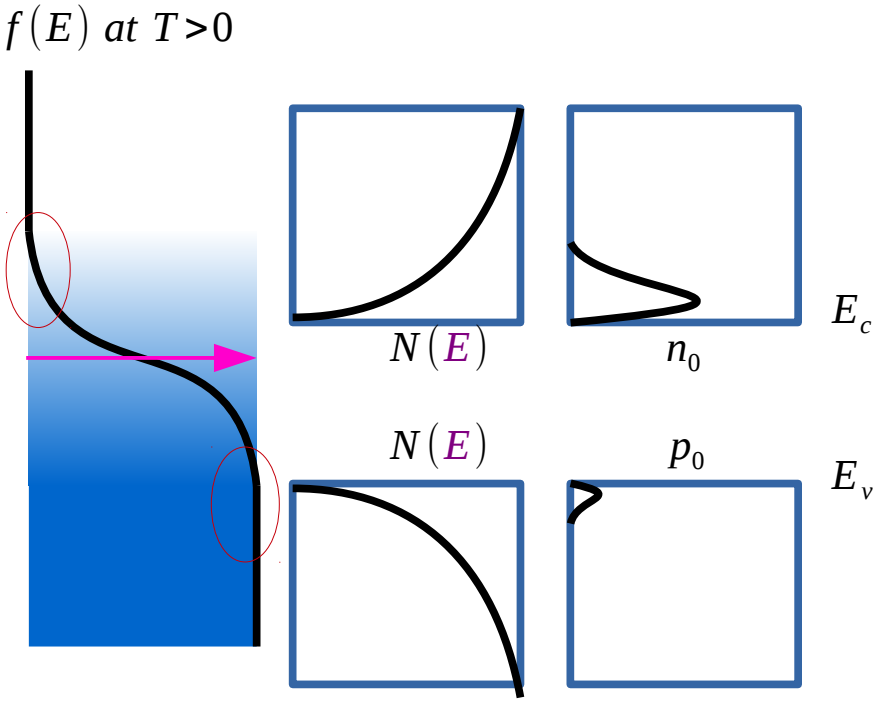
Electron and Hole Concentration - Intrinsic

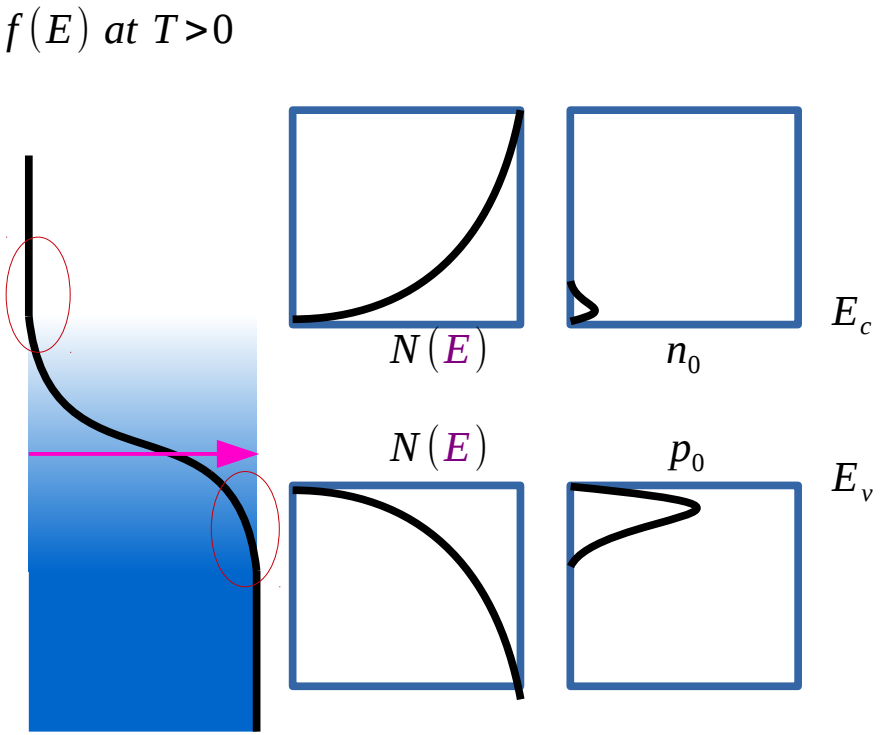
$f(E)$ at $T>0$



$$n_0 = \int_{E_c}^{\infty} f(E) N(E)\, dE$$

Electron and Hole Concentration – Donor & Acceptor





LED Test