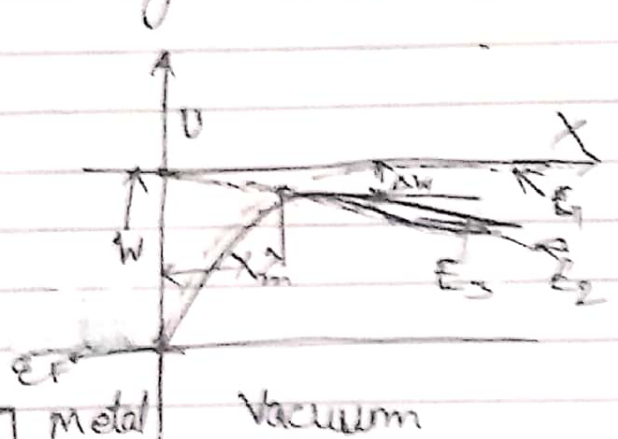


Schottky effect

The Schottky effect in electronics refers to the increase in electron emission from the surface of a heated material when an electric field is applied. This effect reduces the energy required for electron emission known as the work function. Initially, a weak electric field may simply help sweep away electrons already emitted from the material's surface. As the field strength increases, it lowers the work function, thereby increasing the electron emission current.

At very high field strength, the emission becomes excessive due to the onset of high-field emission, also known as field emission. The Schottky effect is named after German physicist Walter Schottky who discovered this phenomenon.



in fig x_m is distance from the high potential barrier to the surface of the metal.

- * W is work function of the metal.
- * U - Potential energy of the surface.
- * E_1 - Electrons potential energy in the field.
- * E_2 - Electron potential energy in the applied field (eEx)
- * E_3 - Resultant electron potential energy.
- * ΔW - Reduction in work function due to applied electric field.
- * E_F - Fermi level of the metal.
- * x - distance of electron from the surface.