$I \propto \frac{B_0}{T}$

$I \propto \frac{\mu_0 H}{T}$ $(B_0 = \mu_0 H)$

$I \propto \frac{H}{T}$ (since μ_0 is constant)

$\frac{I}{H} \propto \frac{1}{T}$

$\chi \propto \frac{1}{T}$ ----------(3) This is curie law.

Curie law can also be defined as the magnetic susceptibility of paramagnetic substance is inversely proportional to the temperature.

Curie Temperature (Curie Point):

The temperature at which there is transition from ferromagnetic substance to paramagnetic substance is known as curie temperature.

- ✓ It is the temperature above which magnetic material lose their ferromagnetic properties.
- ✓ Curie temperature for Iron is 1000K, for cobalt 1400K and for nickel 600K
- ✓ Ferromagnetic substance obeys Curie-Weiss law: $\chi \propto \frac{1}{T-T_c}$, where T_c is Curie Temperature.

Magnetic Hysteresis:

Hysteresis is lagging (phase) of magnetic induction of ferromagnetic materials with respect to the cyclic variation of an applied magnetic field, when the specimen is at a temperature below its curie temperature.

The nonlinear curve between the magnetic intensity $\vec{H}$ and total magnetic field $(\vec{B})$ {or intensity of magnetization (I)} is known as hysteresis curve.

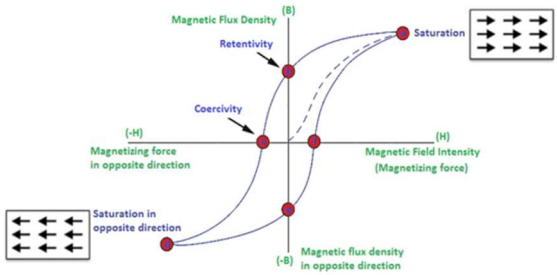

Fig. Magnetic Hysteresis Curve

When a ferromagnetic material is placed in magnetizing field of strength 'H' then it gets magnetized. When H is increased form zero, B also increased along curve OA and reaches to maximum value at A. At this point, B does not increase on increasing H. This condition is known as *magnetic saturation*.

Now, if $'H'$ is decreased slowly the value of $'B'$ also decreases but does not follow the original path instead follow $'ab'$. When the value of 'H' is reduces to zero, the value of $'B'$ does not become zero but has a value equal to magnitude of $'ob'$ and is called Retentivity.

Retentivity (Residual Magnetism): The property of the magnetic material to retain magnetism even in the absence of the magnetizing field $(i.e. H = 0)$ ***is known as Retentivity or Remanence of the material.***

If the direction of H is reversed, the value of B decreases and becomes zero at c.

Coercivity: The reverse magnetizing field to completely demagnetize the ferromagnetic material is called Coercivity or Coercive force.

If H is further increased in reverse direction, B also increases and reaches to saturation at d in reverse direction along cd (i.e. the material is magnetized in reverse direction). Again, as H decreases to zero and then increases in original direction, the path $defa$ is followed and closed curve $abcdefa$ is obtained for one complete cycle of magnetization. This closed curve is known as Hysteresis loop.