Chapter-8

(Understand the concepts of magnetic-materials)

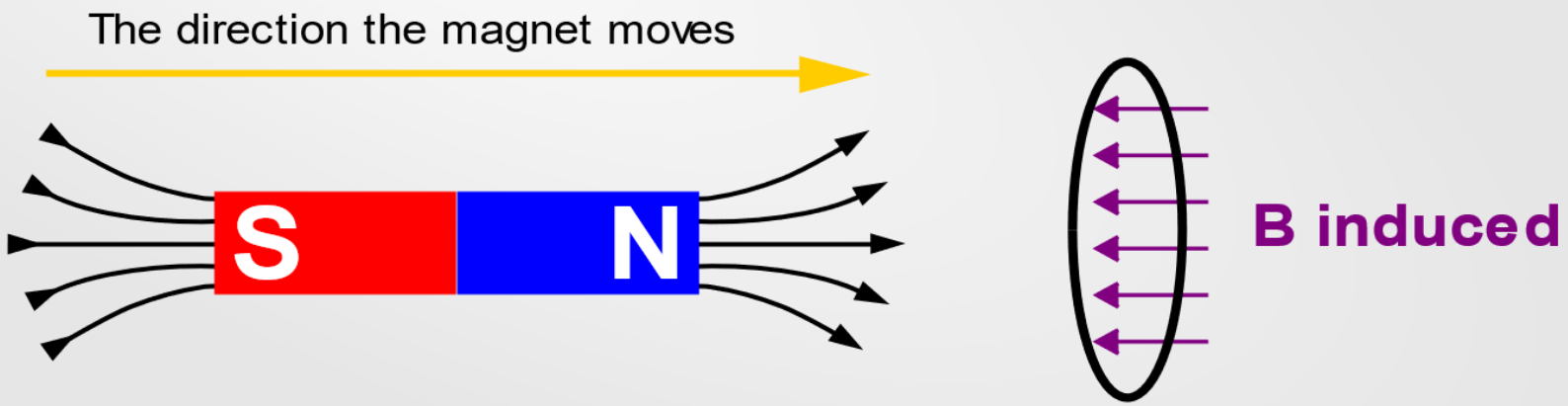
Lecture-1

What are the concepts of magnets?

- All magnets have north and south poles. Opposite poles are attracted to each other, while the same poles repel each other. When you rub a piece of iron along a magnet, the north-seeking poles of the atoms in the iron line up in the same direction. The force generated by the aligned atoms creates a magnetic fiel

Lenz's Law

The induced magnetic field in a loop will **oppose the change** in magnetic flux through the loop



TYPES OF MAGNETIC MATERIALS WITH EXAMPLES

Ferrimagnetics

Fe_3O_4, $PbFe_{12}O_{19}$, $BaFe_{12}O_{19}$, $BaO{\cdot}6Fe_2O_3$, $SrO{\cdot}6Fe_2O_3$

Antiferromagnetics

MnO, FeO, CoO, FeMn, NiO, MnS, MnF_2

Diamagnetics

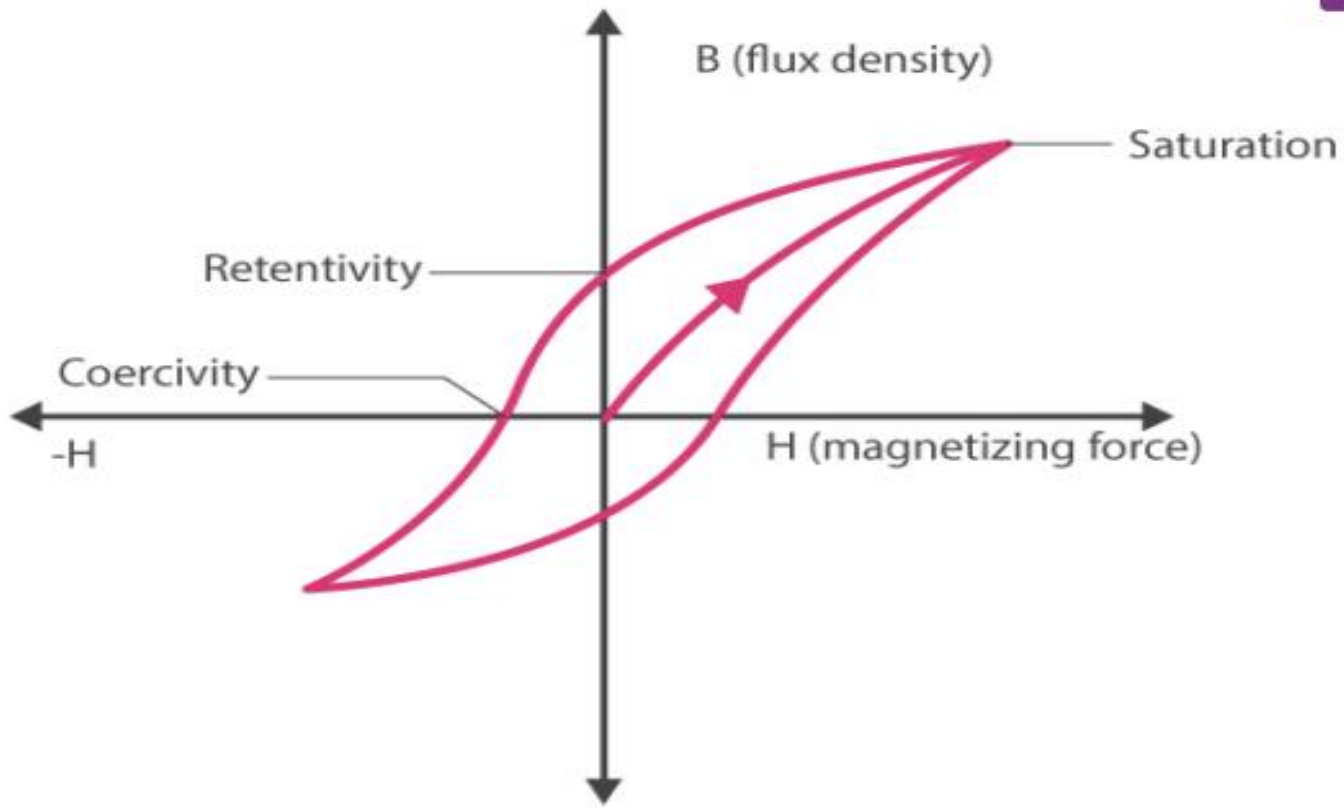
Copper, Mercury, Bismuth, Zinc, Magnesium, Gold, Silicon, Phosphorus, Water, Graphite, Proteins

Paramagnetics

Platinum, Aluminum, Air, Sodium, Tin, Oxygen, Hydrogen

Ferromagnetics

Iron, Cobalt, Nickel, Gadolinium, Dysprosium, Erbium, Holmium


B (flux density)
Saturation
Retentivity
Coercivity
-H
H (magnetizing force)