

# Magnetism

Magnetism - force of attraction or repulsion of a magnetic material due to the arrangement of its atoms

Magnetic substance - one that can be made into a magnet or is attracted to a magnet (i.e. iron, nickel, cobalt, steel)

Two types of magnets:

1) natural magnets - found in nature (magnetite; lodestone)

2) artificial magnets - made by man

a) temporary - can be turned on and off (electromagnet)

b) permanent - cannot be turned on and off

\* all magnets have two poles - north and south  
magnets are strongest at the poles

\* Law of magnetic poles - states that like poles repel (N and N, S and S), and unlike poles attract (N and S)

\* Invisible magnetic lines of force create an area around the magnet called the magnetic field. (Look on back for examples)

Domain - groups of atoms formed with north poles facing in one direction and south poles facing in the opposite direction. (Look on back for example)

\* Magnets can lose their magnetism by heating, dropping, or banging them.

## Electromagnetism

Hans Oersted - found that when electrons flowed through a wire, a nearby compass needle moved. This showed us that there is a magnetic field around a wire carrying electricity. Using this principle we now have electromagnets

### Electromagnet

1. source of power (battery)
2. iron core (nail)
3. coil of wire

To increase power of electromagnet we can:

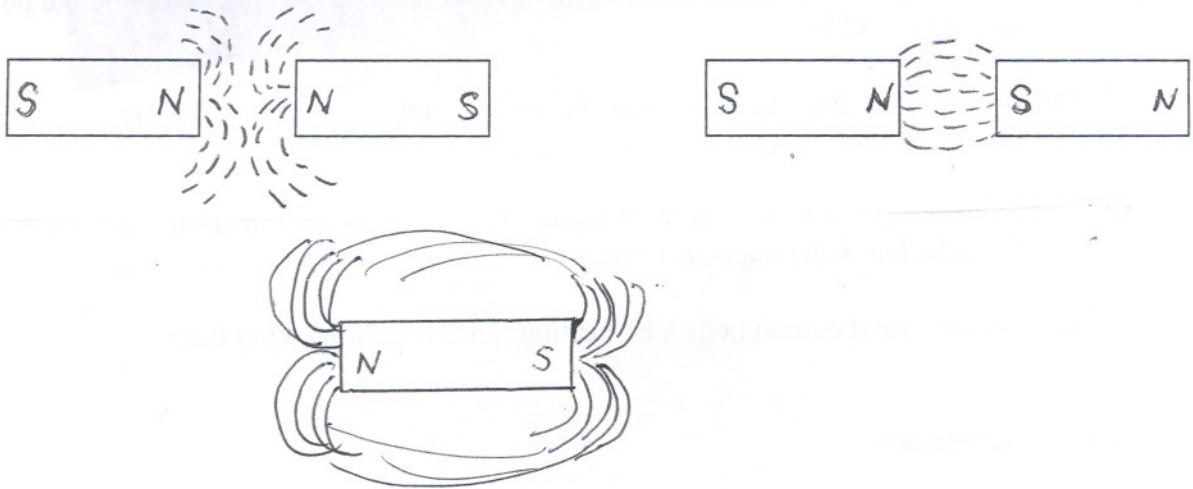
1. increase source of power
2. use a larger iron core
3. use more coils of wire

Michael Faraday - found that when you moved a magnet in a coil of wire, the magnet breaking the lines of force, would make electrons move in the wire. Using this principle we now have electric generators.

Parts of a generator:

- 1) coil of wire
- 2) magnet
- 3) turbine (or something to turn the coil of wire)

**Magnetic Field** - exists in the region around a magnet in which magnetic forces can act



**Domains** - groups of atoms that in magnets are aligned

