

# Magnetism

# Magnets

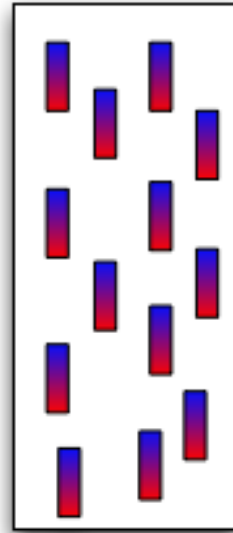
- First found by ancient Greek Region of Magnesia



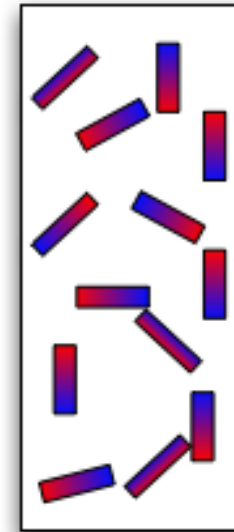
# How it works

- Magnets attract various objects like iron, steel, nickel or cobalt. In ancient times magnets used by humans was naturally occurring lodestone which attracted iron. Most magnets today are made artificially by various means. Magnets have a magnetic field similar to the magnetic field that is created when current flows through a wire. This naturally occurring magnetic field within a magnet creates lines of forces which creates a motion of negatively charged electrons within the magnet.

# Domains



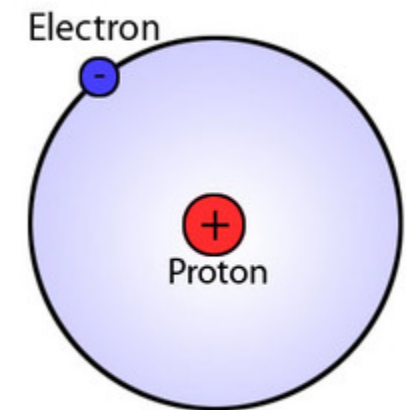
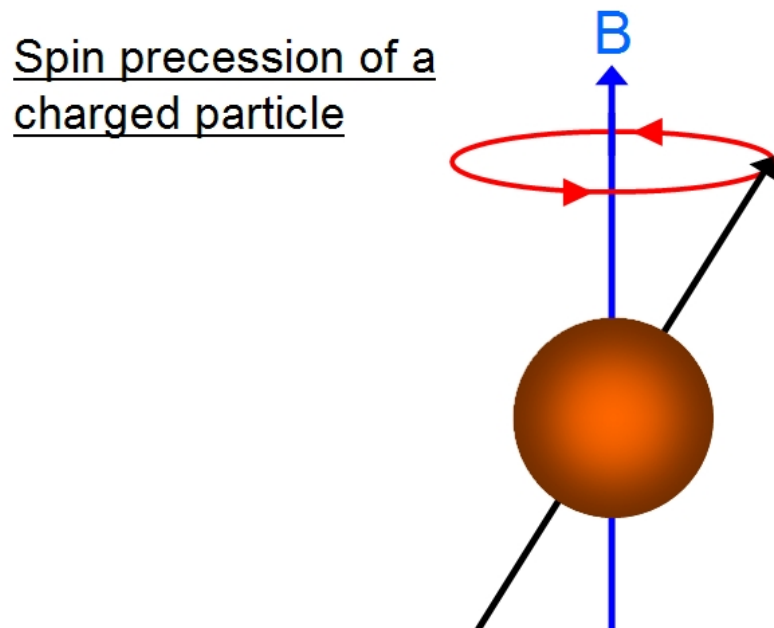
Magnet:  
Alignment of  
Magnetic  
Domains



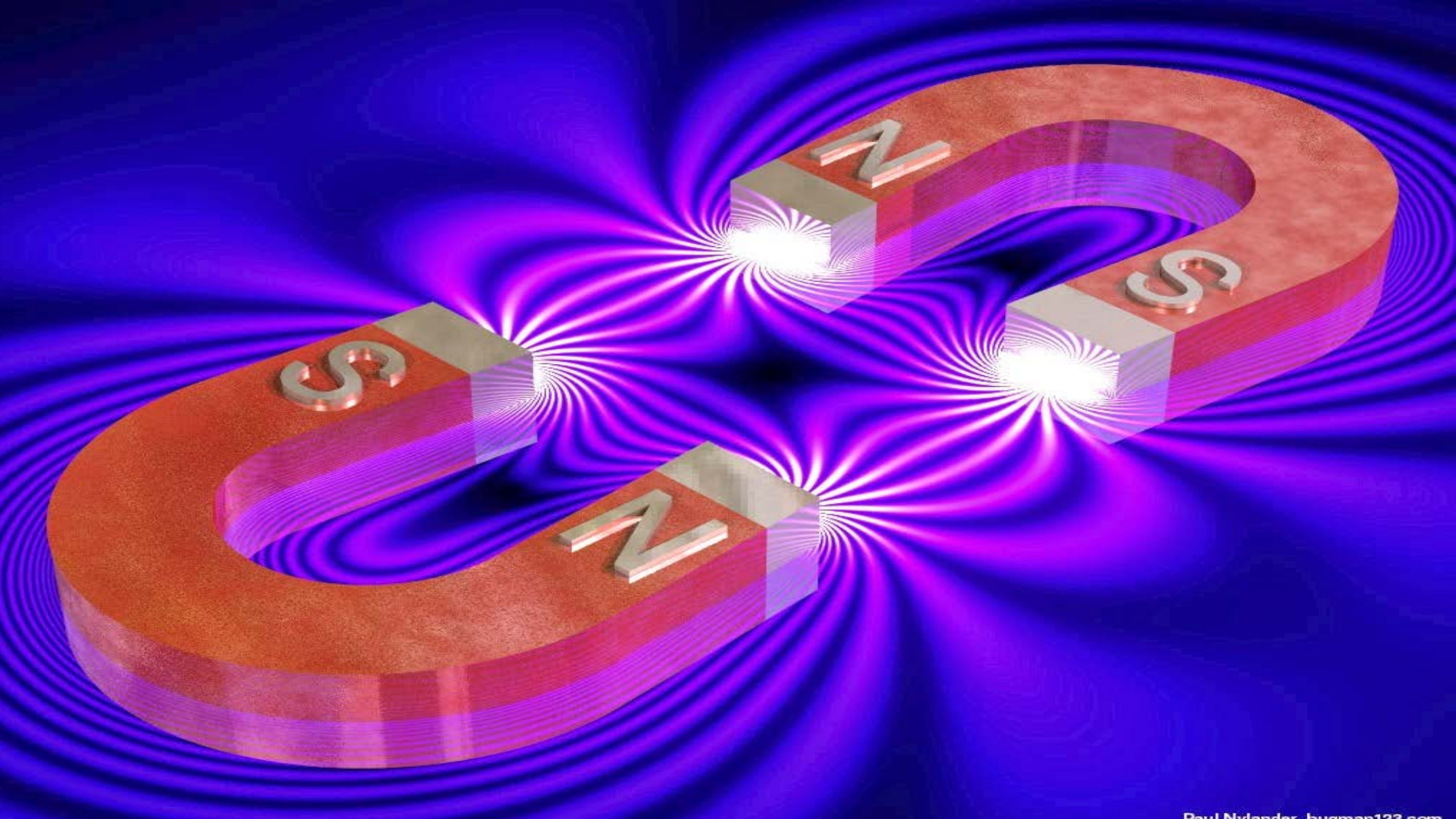
Non-Magnet:  
Random  
Arrangement  
of Magnetic

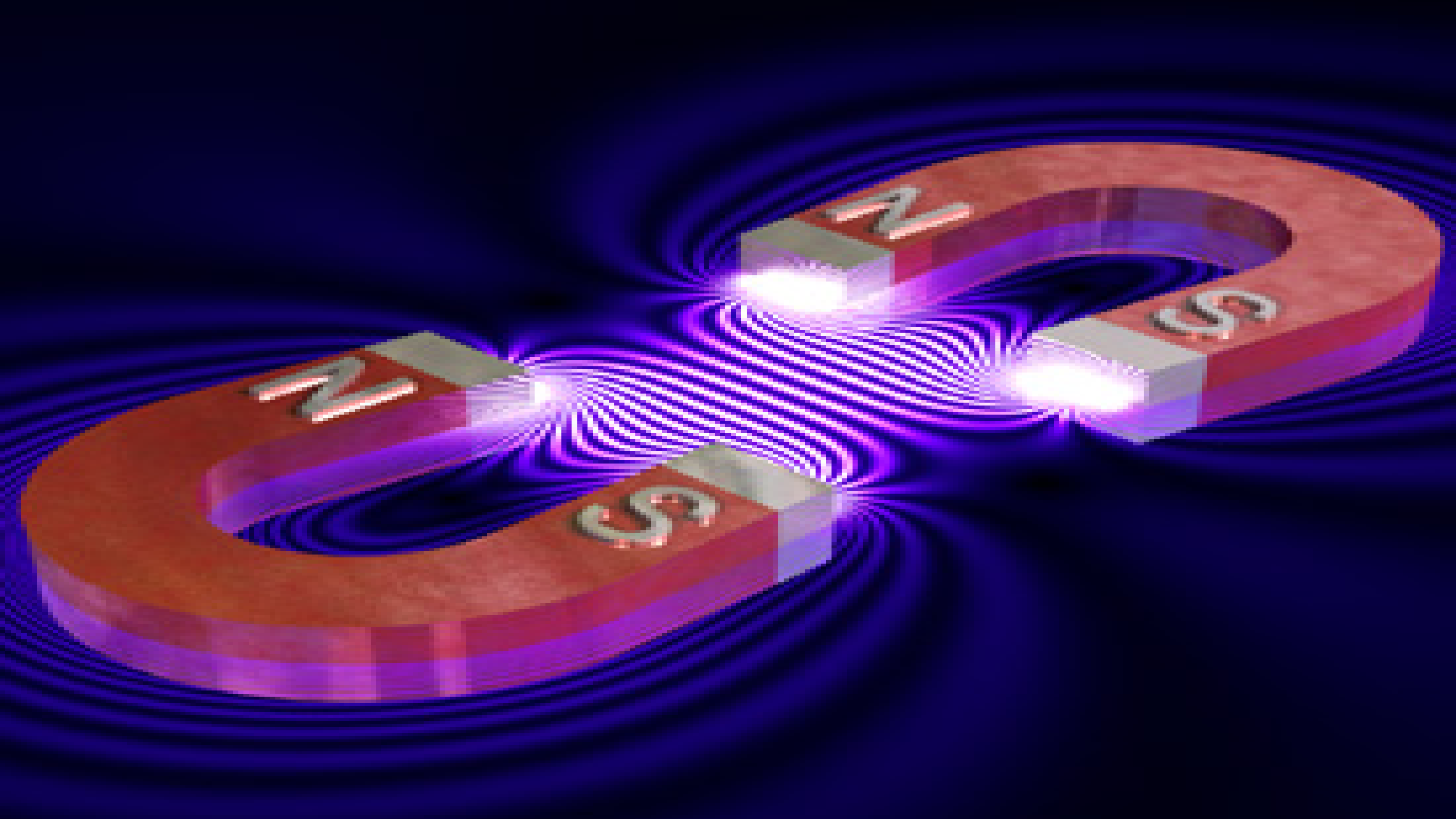
# Electron

- All Magnetism is caused by electrons
- Electrons have a property called spin
- The alignment of these magnetic spins that creates magnetism in iron.
- Spin only occurs naturally in Iron, Cobalt and Nickel. Outer valence electrons are paired with parallel spins.
- Spins must be aligned to create magnetism.

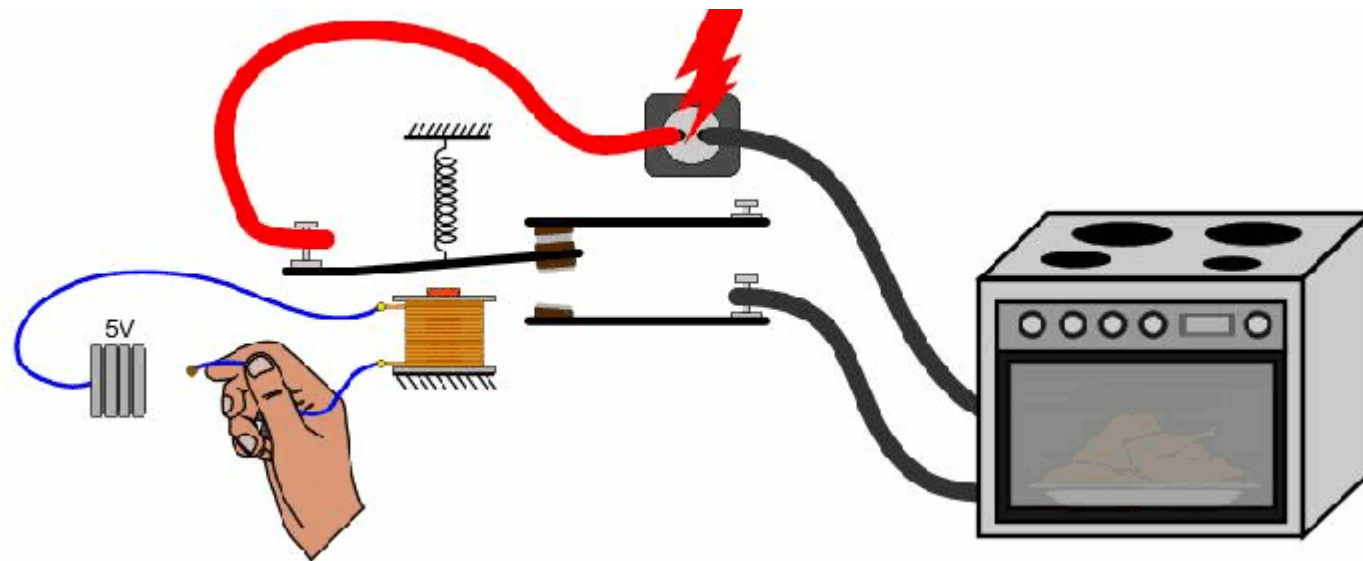
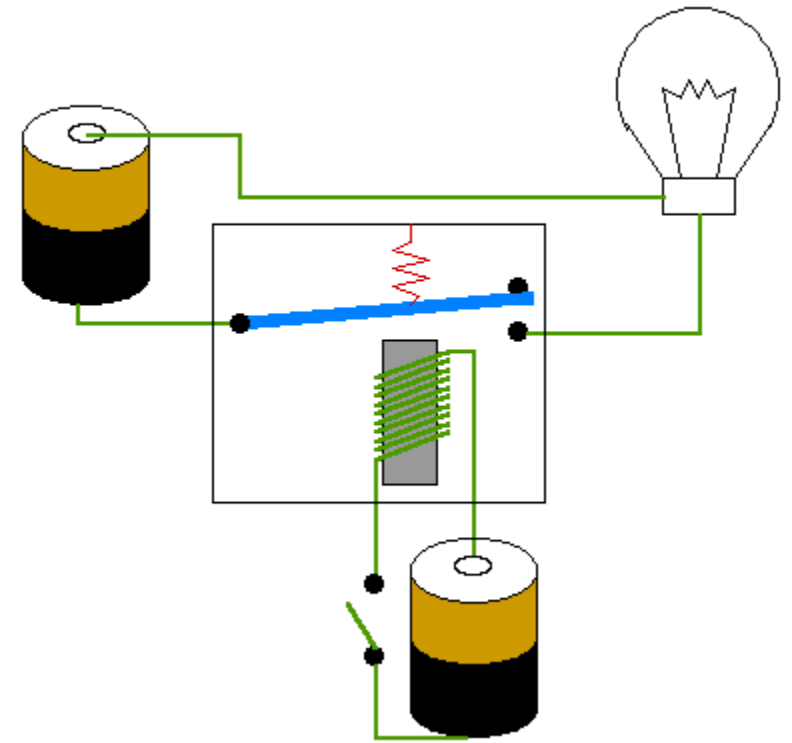
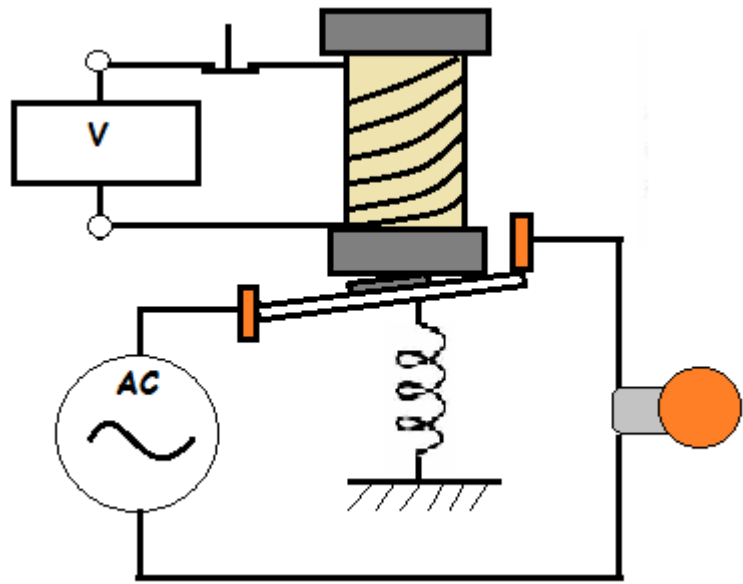


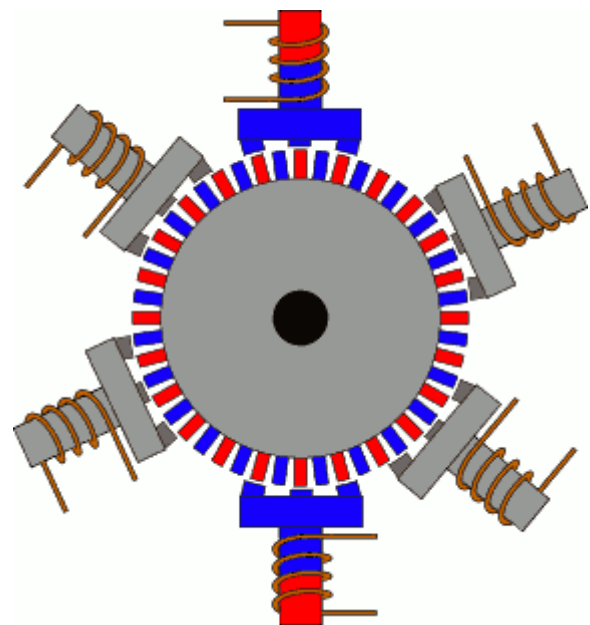
- North poles repel North poles.
- South poles repel South poles.
- North poles attract South poles.
- South poles attracts North poles.
- The force of attraction varies inversely with the distance.
- The strength of a magnet varies at different locations on the magnet.
- Magnets are strongest at their poles.
- Magnets strongly attract things like steel, iron, nickel, cobalt and other ferrous metals.
- Magnets slightly attract liquid oxygen and other materials.
- Magnets slightly repel water, carbon and boron.











Start 1

