

MAGNETISM AND MATTER**MAGNETISM AND GAUSS'S LAW****Magnetism:**

1. Magnetism is the force that magnets exert when they attract or repel one another.
2. The movement of electric charges causes magnetism.
3. Every material is composed of microscopic components known as atoms.
4. Each atom contains electrons, which are charged particles.
5. Electrons spin like tops around the nucleus, or center, of an atom.
6. Their movement produces an electric current, causing each electron to behave like a miniature magnet.

Gauss' Law of Magnetism:

1. Carl Friedrich Gauss first proposed the Gauss Law in 1835, which connected the electric fields at points on a closed surface to the net charge encompassed by that surface.
2. Gauss' Law for magnetism applies to the magnetic flux through a closed surface. Here the area vector points out from the surface. Because magnetic field lines are continuous loops, all closed surfaces have as many magnetic field lines going in as coming out. Hence, the net magnetic flux through a closed surface is zero.
3. Net flux is given mathematically by the expression, B corresponds to Magnetic Field, and A represents the surface area $\phi = \int \mathbf{B} \cdot d\mathbf{A}$, B