Magnetic Materials Background Information

Magnetic materials encompass a wide variety of materials, which are used in a diverse range of applications. Magnetic materials are utilised in the creation and distribution of electricity, and, in most cases, in the appliances that use that electricity.

They are used for the storage of data on audio and video tape as well as on computer disks. In the world of medicine, they are used in body scanners as well as a range of applications where they are attached to or implanted into the body. The home entertainment market relies on magnetic materials in applications such as PCs, CD players, televisions, games consoles and loud speakers.

It is difficult to imagine a world without magnetic materials and they are becoming more important in the development of modern society. The need for efficient generation and use of electricity is dependent on improved magnetic materials and designs.

Non-polluting electric vehicles will rely on efficient motors utilising advanced magnetic materials. The telecommunications industry is always striving for faster data transmission and miniaturisation of devices, both of which require development of improved magnetic materials.

Magnetic materials are classified in terms of their magnetic properties and their uses. If a material is easily magnetised and demagnetised then it is referred to as a soft magnetic material, whereas if it is difficult to demagnetise then it is referred to as a hard (or permanent) magnetic material. Materials in between hard and soft are almost exclusively used as recording media and have no other general term to describe them. Other classifications for types of magnetic materials are subsets of soft or hard materials, such as magnetostrictive and magnetoresistive materials.

Further Information:

- **History of Magnetic Materials** (/Documents/college-eps/metallurgy/research/Magnetic-Materials-Background/Magnetic-Materials-Background-1-History.pdf)
- **Origins of Magnetism** (/Documents/college-eps/metallurgy/research/Magnetic-Materials-Background/Magnetic-Materials-Background-2-Origins-of-Magnetism.pdf)
- **Units and Terminology** (/Documents/college-eps/metallurgy/research/Magnetic-Materials-Background/Magnetic-Materials-Background-3-Units-and-Terminology.pdf)
- **Classification of Magnetic Materials** (/Documents/college-eps/metallurgy/research/Magnetic-Materials-Background/Magnetic-Materials-Background-4-Classification-of-Magnetic-Materials.pdf)
- **Magnetic Properties** (/Documents/college-eps/metallurgy/research/Magnetic-Materials-Background/Magnetic-Materials-Background-5-Properties.pdf)
- **Magnetic Domains** (/Documents/college-eps/metallurgy/research/Magnetic-Materials-Background/Magnetic-Materials-Background-6-Domains.pdf)
- **Hysteresis** (/Documents/college-eps/metallurgy/research/Magnetic-Materials-Background/Magnetic-Materials-Background-7-Hysteresis.pdf)
- **Magnetic Domain Observation** (/Documents/college-eps/metallurgy/research/Magnetic-Materials-Background/Magnetic-Materials-Background-8-Domain-Observation.pdf)
- **Hard Magnets** (/Documents/college-eps/metallurgy/research/Magnetic-Materials-Background/Magnetic-Materials-Background-9-Hard-Magnets.pdf)
- **Soft Magnets** (/Documents/college-eps/metallurgy/research/Magnetic-Materials-Background/Magnetic-Materials-Background-10-Soft-Magnets.pdf)
- **Magnetic Recording** (/Documents/college-eps/metallurgy/research/Magnetic-Materials-Background/Magnetic-Materials-Background-11-Magnetic-Recording-Media.pdf)
- **Other Materials** (/Documents/college-eps/metallurgy/research/Magnetic-Materials-Background/Magnetic-Materials-Background-12-Other-Materials.pdf)