

Electricity & Magnetism

Magnetism

Background

Magnets have two distinctive properties; they attract certain metals, and when suspended freely they align themselves with the earth's magnetic field, thereby coming to rest pointing north. The fact that iron is not magnetic but may be magnetised can be shown in this demonstration.

You will need...

- ✓ A compass,
- ✓ bar-magnet, t
- ✓ test tube, i
- ✓ iron filings.

Follow these steps

1. The Dublin physics teacher, David Hobson showed that when a test tube containing iron filings (scattered evenly along its length) is brought near a compass needle, it has no effect. However if one strokes the outside of the tube from one end to the other (a number of times in the same direction) the iron becomes magnetised.

So what happened?

The molecular magnets in the iron were brought into alignment and so the iron became magnetised. When the test tube was brought close to the compass needle, it deflected, indicating that the iron filings were magnetised.

What next?

Shake the test tube, and test it for magnetism by bringing it close to the compass needle again. This time the compass is unaffected, because iron has poor magnetic retentivity, hence the magnetism was lost when the filings were shaken.

