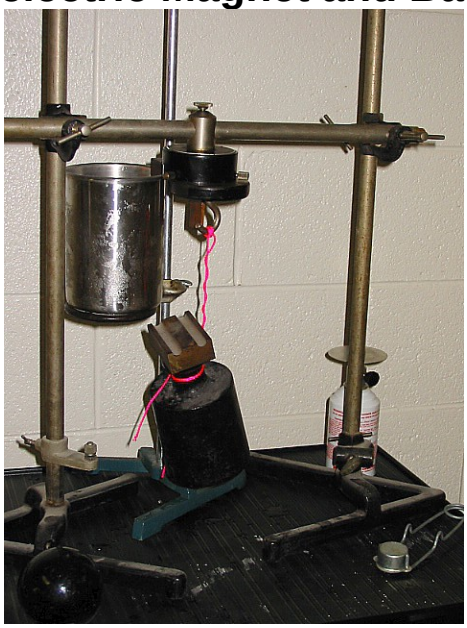
Thermoelectric Magnet

Thermoelectric Magnet and Base Plate



Setup

Purpose: An astounding demonstration of the thermoelectric effect.

Here, the thermoelectric effect is used to provide current for an electromagnet. The coil is a single loop of heavy copper, with a dissimilar metal brazed across the end forming two thermoelectric junctions. By immersing one of its fins in ice water, and heating the other with a butane torch, a large current flows and produces a very

strong magnet! (The manual says they have measured a pull of over 400 lbs!)

Note: Once you start heating the torch, the magnet will start attracting the base plate. Within about 30 secs. It is held so strongly that there is no way to reposition it – so do so early.

When the torch is removed, the current continues to flow for so long that it becomes boring. A fun thing to do is dip both fins in the ice water, and splash water up on both junctions. The weight comes crashing down.

Extra Equipment: Two large ring stands with a cross bar, a small ring stand and ring to support the ice-water can, the can, and a butane torch with striker.

Also: a large, impressive weight with some means to attach it to the base-plate hook (e. g. the red cord in the setup photo).

Location: Shelf D4