

## Electricity & Magnetism

# Make a Curie motor

(Poland)

### Background

The Curie motor is a thermo-magnetic motor based on the loss of ferromagnetic properties of a material at its Curie temperature.

The Curie temperature is the temperature above which the ferromagnetic substance rapidly loses its magnetic properties and becomes paramagnetic. The Curie temperature for nickel is approximately 353°C.

### You will need:

- ✓ Neodymium magnet
- ✓ nickel wire/strip
- ✓ copper
- ✓ wire/strips
- ✓ candle

### Follow these steps:

1. The first step is to make the rotor's support structure. Use a non-ferromagnetic material, such as aluminium, copper or brass. You can attach the copper wire to a nut that can rotate around a bar as shown in Figure 1.
2. Wrap nickel wire/strip around the end of the wire.
3. Attach strong neodymium magnets to a support frame so the nickel wire will be attracted to it as in Figure 1.
4. Light a candle and place under the nickel.



Figure 1



Figure 2



Figure 3

### So what happened?

When the nickel reaches the Curie temperature it loses its magnetism and falls away from the magnets.

As it swings it cools and becomes ferromagnetic again. It is then attracted back to the magnets.

This process repeats.

### What next?

Experiment with different motors. See Figure 3