

Electricity & Magnetism

Magneto-hydrodynamic Effect

Background

When electricity moves through a conductive fluid in a magnetic field, a force, called the Lorentz Force, is imparted on the fluid, causing it to move.

You will need...

- ✓ Petri dish,
- ✓ aluminium foil,
- ✓ ring magnet,
- ✓ strong copper wire,
- ✓ cracked black pepper,
- ✓ salt,
- ✓ water,
- ✓ low voltage power supply,
- ✓ wire and crocodile clip.

Follow these steps

1. Place the aluminium foil around the inside the of the Petri dish as in picture.
2. Sit the Petri dish on top of the ring magnet.
3. Make up a saline solution and pour into the Petri dish.



4. Attach the aluminium foil in the Petri dish to the negative of the low voltage power supply using the wire and crocodile clip.
5. Attach the copper wire to the positive of the low voltage power supply and place the end of the wire in the saline solution so it is in the middle above the hole in the ring magnet.
6. Sprinkle cracked black pepper over the surface of the saline solution.
7. Turn the low voltage power supply on and increase the voltage to 12volts.
8. Observe what happens.

So what happened?

The cracked black pepper moves in two different directions simultaneously showing the forces caused by the current flowing in a magnetic field.

What next?

1. Reverse the polarity of the power supply.
2. Reverse the poles of the magnet.

