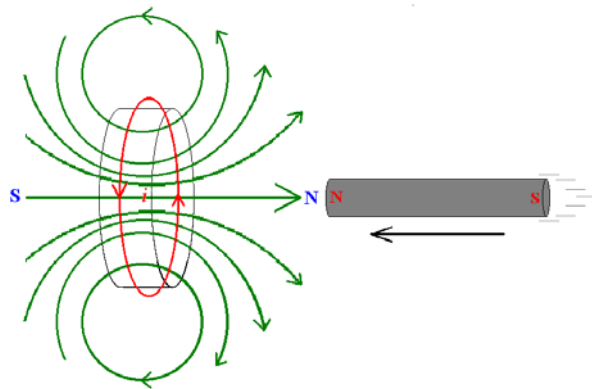


**DEVICE** Lenz's Law Demonstration

**TOPIC** Electricity and Magnetism

**THEORETICAL BACKGROUND** Faraday's Law of induction states that an electric current can be produced by a changing magnetic field. The direction of the induced emf and induced current is determined from Lenz's Law which states that the polarity of the induced emf is such that it tends to produce a current that will create a magnetic flux to oppose the change in the magnetic flux through a loop. For this demonstration to work effectively, a magnet is dropped inside of a long metallic pipe. As the magnet falls through the pipe, a current is induced in the pipe. This current in turn produces its own magnetic field which opposes the motion of the magnet. The magnet continues to fall, or at least is not repelled upward through the pipe, due to gravitational forces.



**DESCRIPTION** The demonstration makes use of an aluminum tube, a copper tube, a piece of PVC pipe, and one or two button magnets.

**PROCEDURE**

1. Obtain the necessary equipment and drop the button magnets through the pipes.
2. Why does the magnet tend to rotate about itself as it falls through the copper tube?

**SUGGESTIONS**