Memory Metal

Purpose

To illustrate an application of an alloy.

Materials

memory metal

500 mL beaker

hot plate

Procedure

1. Show students memory metal on overhead.
2. Pull on ends to distort metal.
3. Ask students how to get shape back.
4. Put metal into warm water (50 C) and observe that shape changes back to original.
5. Put reshaped metal on overhead.

Additional Information

1. Memory metal is Nitinol (Nickel Titanium Naval Ordinance Laboratory). It contains equal number of nickel and titanium atoms. If held in a shape and heated to 500-550 C it "memorizes" the shape.
2. The "memorized" shape can be recovered by heating to 30-80 C.
3. Applications include switches, safety valves in showers, some staples, orthodontic wires, eyeglasses frames.

Reference

Memory Metal, Institute for Chemical Education, 1992.