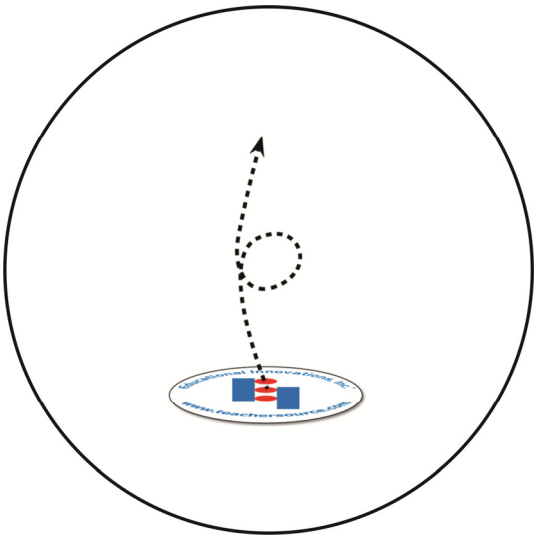
Bimetallic Jumping Disc



Equipment:

bimetallic jumping disc
(optional: cup with warm water)

Chemicals:

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Safety:

It is recommended to wear safety glasses.

Procedure:

First, the disc is warmed to about body temperature by rubbing it between the palm of one hand and the fingers of the other or by holding it, for example, against the outside of a cup with warm water. Then, it is “clicked” from its original convex shape to a concave shape. If the metal was warm enough, the disc will remain temporarily in this “inverted” position. Subsequently, the disc is quickly but carefully placed on a hard surface like a table.

Observation:

After a short while, the disc suddenly snaps back into its original shape with a loud click and jumps into the air.

Explanation:

The disc consists of two layers of different metals, which are welded together (so-called “bimetal”). When the entropy of the disc is increased, the two metals expand varyingly strong because of their rather different coefficients of thermal expansion and above a temperature of approximately 310 K the disc stays in the “inverted” position. When the disc cools down, the metals shrink again and the disc returns spontaneously to its original shape.

The same principle applies to a thermostat or a shunt-valve in a car.

Disposal:

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Source of supply:
for example Educational Innovations (http://www.teachersource.com)