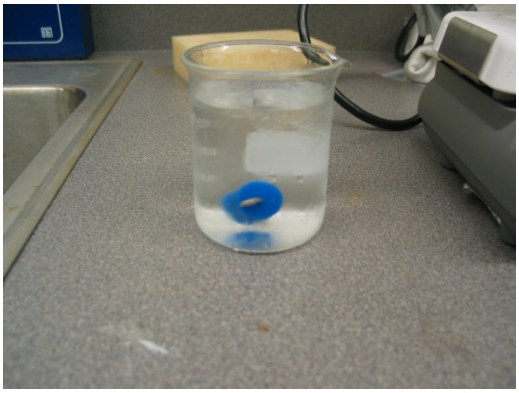
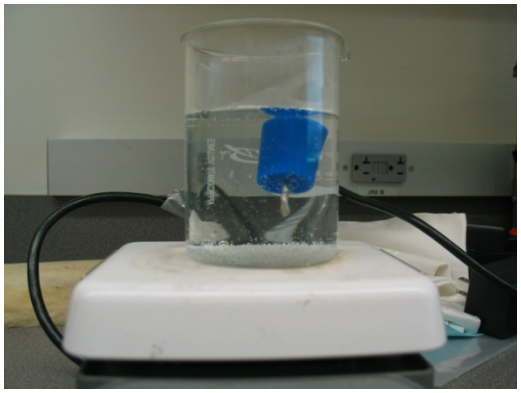
Density Paradox?

Purpose: To demonstrate that objects can either sink or float depending on the temperature of the object and the liquid.

Location: Room 136; shelf O4; gloves, L1; specimen tongs, I4

This demo is best done immediately after doing the Density Ball demo. Remove the density ball and put one of the blue objects into the hot water. (Make sure it is submerged so surface tension is not a factor.) It should sink initially then eventually begin to float as it heats up and expands in the hot water.

Although the object's average density when it is at room temperature is greater than that of the warm water, it's volume expands as it heats up, while it's mass stays constant. It's effective density therefore decreases until it is less than the water's, and it starts to float. The process can be reversed by emptying the hot water, replacing it with cold water, and submerging the object in the cold water. If it does not sink after several minutes, ice may be needed. Note that this is just the opposite of the behavior of the Density Ball demo. Ask the students "Why?".

Ice may be needed for this demonstration.