INVESTIGATION 1

PURPOSE

To investigate the piece of wire that has been provided by your instructor. Everyone thinks of himself or herself as a good observer. Yet there is much more to being a good observer than meets the eye! It takes concentration, alertness to detail, ingenuity, and often, great patience. It even takes practice! As you make your observations, keep an open mind and also consider any conditions during the experiment that may be important to its outcome. Can any of these conditions be controlled?

PROCEDURE

a. Observe the piece of wire that has been provided by your instructor. Note its outward characteristics, especially its shape. (Draw its initial shape in your notebook.) Fill a 400 mL beaker 2/3 full of tap water and place it on a wire screen on a ring stand or a hot plate as directed by your instructor. NOTE: Your instructor may provide you with hot water.
b. Make several coils in the wire by wrapping it around your pencil several times.
c. If you are to heat water, place the wire into the beaker and begin slowly heating the water while carefully observing the wire. Stop heating after any significant changes to the wire have been observed.
d. Record your observations.

FOLLOW-UP QUESTIONS

1. List your observations before and after deforming the wire. Also list your observations as you heated the wire. Specifically, what happened when the deformed wire was exposed to hot water?

2. What questions came to mind as you performed this experiment? Invariably, good observations lead to many questions; recall what being a good observer entails.

3. Why do you think these wires fall into a category called “smart materials”?

4. What possible uses could materials similar to these have?