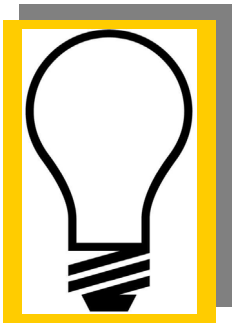
# Dynamic Design: A Collection Process

## Concentrate

### STUDENT ACTIVITY



In this activity your group will study the solar wind concentrator in the Genesis sample return capsule. You will then design a mirror model for the concentrator. The concentrator contains an entry grid that is positively charged to repel hydrogen ions and a mirror grid in the shape of a parabola to reflect the solar wind particles to the carbon vapor deposit gold-plated diamond target. You will model the concentrator by using a plastic bowl lined with a reflective material (aluminum foil) for the mirror grid, wire mesh, or polarized paper to represent the entry grid, a solar panel to represent the target, and a light bulb to model "solar wind particles." (Note: Although light is not a perfect model for solar wind materials because solar wind is made up of different elements, the purpose of this activity is to model the concentrator.) Wire mesh or polarized paper is used to simulate the entry grid and can be manipulated so that only a certain amount of light gets into the concentrator.

## PROCEDURE:

1. Your group is going to design a model of a concentrator, using the supplies given. First, read the Student Text, "The Concentrator."

2. Before you begin the model, what decisions do you need to make?
   - How will you line the plastic container?
   - Which side of the aluminum foil will be facing up?
   - How smooth will the foil be?
   - Where will the solar cell be located?
   - How will the solar cell be suspended?
   - How will the Polaroid® paper be used?
   - What other decisions need to be made?

3. Once your group has answered the above questions, gather the materials and start construction of the concentrator.

4. Use a light source to test how well your concentrator works. Then use the Polaroid® (or wire mesh) to manipulate the amount of light that enters the concentrator.

5. Try another type of reflective material for the mirror grid to model the concentrator.

6. Make a data table to record decisions and qualitative data observations of your model.

7. How is your model an accurate representation of the actual concentrator? How is it inaccurate?