Activity 5: Astronaut Glove Box

Introduction

Apollo astronauts have brought back more than 800 pounds of Moon rocks and soil to Earth. We are still studying the rocks and soil to learn more about the origins of the Moon and the Earth. One recent and surprising discovery is that most of the craters on the Moon came from a single, catastrophic event.

A scientist at NASA still remembers handling her first Apollo sample decades ago, wearing three sets of gloves and working in a nitrogen-filled glove box. "Just to pick it up was really exciting," she says, "because I was picking up a piece of the Moon."

Supplies (for each glove box)

- Large cardboard box for examining rocks
- Utility knife (adults only)
- Rubber gloves (small size for small hands)
- Duct tape
- Small plastic bowls (optional)
- Magnifying glass
- Small ruler
- Rocks of various sizes and shapes
- Plastic wrap
- Clipboard and paper
- Pen or pencil

Moon rock from Apollo 14 mission, 1971 © NASA

Get kids thinking

We didn't know anything about the Moon rocks when we first collected them. Could they cause disease in humans or be dangerous in some other way?

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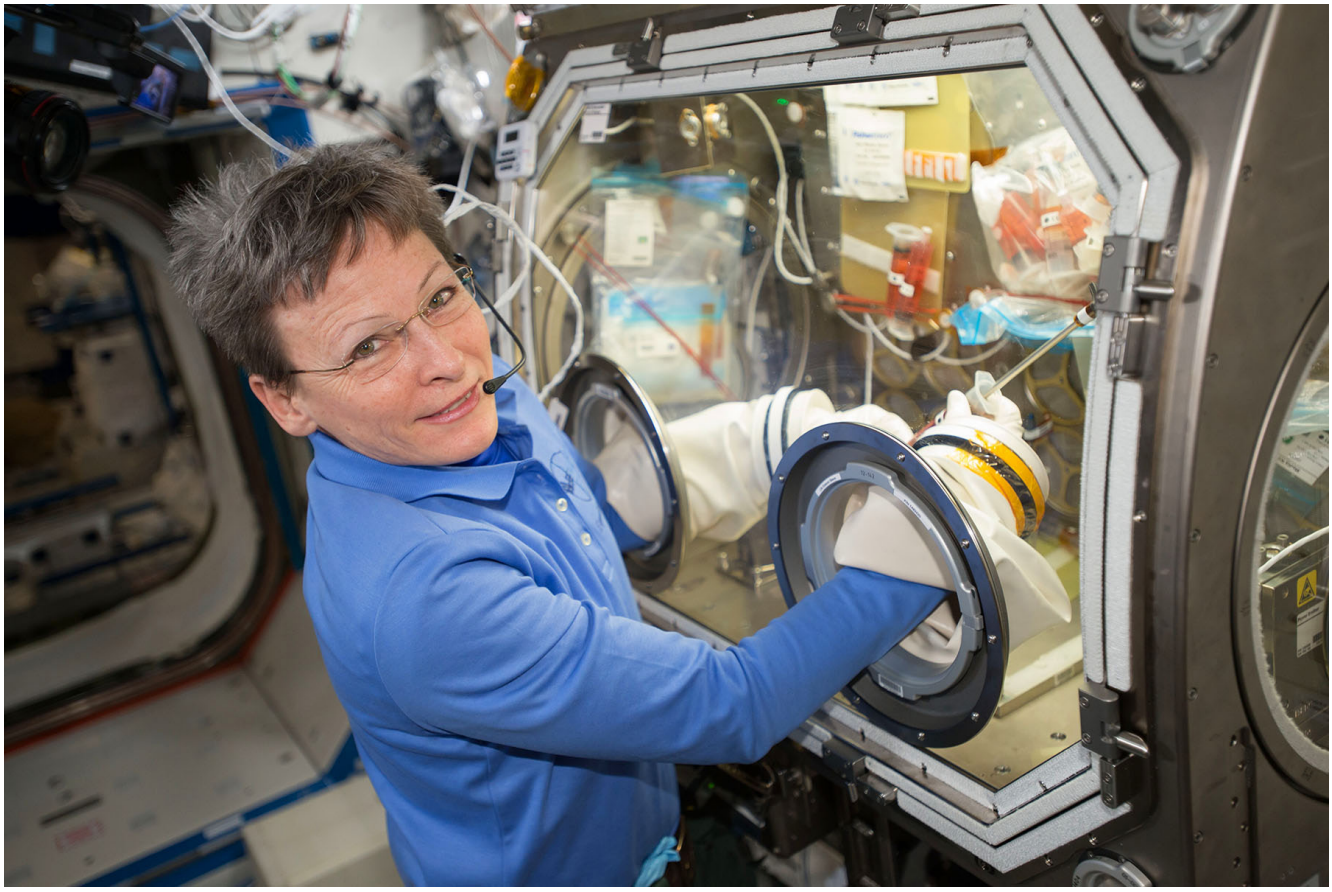
Scientists who study the Moon rocks use a special sealed glove box to handle, measure, and perform tests. **Ask kids:** Why do you think it is important to use a glove box?

Using a sealed box keeps human hands away from objects that may be harmful to us, and it also protects objects that may be damaged if touched directly by human hands.

Scientists living and working on the International Space Station also use glove boxes for all kinds of experiments in space. Here's a photograph of Commander Peggy Wilson doing a study on bone cells:



Destiny Lab on the International Space Station © NASA

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Let's get started!

In this activity, kids will get a chance to examine "Moon rocks" using a glove box, and record what they observe.

Adults can build the glove box ahead of time, or if you have a small group you can let the kids help with the construction.

Step one should be done by adults only: First, cut the lid flaps off of the cardboard box. Then cut two round holes on both sides of the box — holes large enough for kids to fit their hands through but small enough that you can tape the gloves to them (see next step).

Place the gloves through the holes you've cut, and position them for little hands — and make sure to put the left glove in the left hole and the right glove in the right hole! Tip: If you point the thumbs inwards and slightly up the hand position will feel more natural to the kids.

Use duct tape to form a complete seal on the outside of the box where the gloves went in. **Ask kids:** why is a complete seal so important to scientists and astronauts?

Fill the box with rocks, magnifying glass, and the optional small plastic bowls (for sorting rocks into categories by size, color, roughness, etc.).

Cover the top of the box with plastic wrap and seal with duct tape.

Have kids observe the rocks feel the rocks with their hands, measure the rocks, and sort into the bowls. While two kids are manipulating the rocks, two other kids can be taking notes about what their lab partners are seeing in the glove box. Then switch places.