Today’s Presenters:

Dr. Paul Abell: NASA Johnson Space Center’s Chief Scientist for Small Body Exploration

Dr. Nicole Lunning: OSIRIS-REx Sample Curator and Antarctic Search for Meteorites (ANSMET) Explorer

Paige Graff: NASA Johnson Space Center’s Astromaterials Science Engagement Specialist

Welcome!

As we wait to get started with today’s discussion, please:
Introduce yourself! Type your name, institution, and location into the Chat Box

Questions? Feel free to type your questions into the Chat Box at any time throughout the webinar or use the raise your hand function in the participants list and we’ll unmute your microphone.

Today’s discussion will be recorded and shared on nisenet.org at: nisenet.org/events/online-workshop
2023 Online Workshops
Bubbling Up later this Year... 🎉

Changing Brains - New Tools for Brain Awareness Week & Beyond

Tuesday, March 14, 2023
2pm-3pm Eastern / 11am-12pm Pacific

Making Waves with Radio - New Ways to Engage Audiences with the Basics of Modern Communication & Navigation

Tuesday, April 4, 2023
2pm-3pm Eastern / 11am-12pm Pacific

Learn more at nisenet.org/events
Asteroids, Comets, Meteors, and Meteorites

- Educational materials about asteroids, comets, meteors, and meteorites
- Resources for Asteroid Day, meteor showers, and other annual events
- Links to NASA missions such as Lucy, OSIRIS-Rex, Psyche, Double Asteroid Redirection Test (DART), and Near-Earth Asteroid Scout (NEA Scout)

nisenet.org/asteroids
EDUCATOR RESOURCES

1. Meteorite Discovery Board
2. Chatterboxes
3. Career Hexagons
4. Let's Discover New Frontiers

ANTARCTIC METEORITE COLLECTION
SELECT AN ORIGIN POINT

ANTARCTIC METEORITE
SAMPLE GRO 170999,0 (SUBSAMPLE)
CHATTERBOXES

FILL OUT YOUR CHATTERBOX:
1. Read each question and draw and label your answer.
2. Assign each answer a number of points (1-4) within the dotted circle.

FOLDING INSTRUCTIONS:
1. Print and cut around the outside border of the Chatterbox (square).
2. Fold the square in half, unfold, and in half again in the opposite direction.
3. Unfold the square. With the blank side up, fold each corner to the center (middle) of the square. You will have a smaller square.
4. Turn over and repeat steps 3, creating an even smaller square.
5. Turn over so you can see the pictures.
6. Slide your thumb and your finger under the flap of 2 of the pictures and press the top corners together.
7. Slide your thumb and your finger under the flap of the other 2 pictures and press the top corners together.
8. All pictures should now be visible with top corners touching.

CHATTERBOX CHALLENGE: 2 PEOPLE

STEP 1: Person 1: Hold your completed Chatterbox. Person 2: Pick a solar system location. Person 1: Spell out and move the Chatterbox according to the location chosen (for example: M - A - R - S).

STEP 2: Person 2: Pick a letter shown in the Chatterbox. Person 1: Count and move the Chatterbox according to the letter chosen.

STEP 3: Person 2: Pick a letter shown in the Chatterbox. Person 1: Read the question and see if Person 2 can answer correctly. If they do, they earn the number of points you assigned to that question. (Keep track of points earned.)

STEP 4: Change roles and complete steps 1-3. (Repeat 4 times - person must choose different question each time.)

DETERMINING THE WINNER: After completing the above steps 4 times, the person with the most points wins.
FILL OUT YOUR CHATTERBOX:
1. Write your own question and draw and label your answer.
2. Assign each answer a number of points (1-6) within the dotted circle.

FOLDING INSTRUCTIONS:
1. Print and cut around the outside edge of the Chatterbox.
2. Fold the square in half, unfold, and in half again in the opposite direction.
3. Unfold the square. With the blank side up, fold each corner to the center (middle) of the square. You will have a smaller square.
4. Turn over and repeat step 3, creating and even smaller square.
5. Turn over so you can see the pictures.
6. Slide your thumb and your finger under the flap of 2 of the pictures and press the top corners together.
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STEP 4: Person 2: Change and complete steps 1-3. (Repeat 4 times - person must choose different question each time.)

DETERMINING THE WINNER: After completing the above steps 4 times, the person with the most points wins.
METEORITE DISCOVERY BOARD ACTIVITY

Highlighting diverse SMEs that work with meteorites
JORDYN-MARIE DUDLEY
PLANETARY GEOCHEMIST

NASA Johnson Space Center (JSC) Astromaterials Research & Exploration Science (ARES) Division Houston, Texas

Jordyn-Marie is a Planetary Geochemist within NASA Johnson Space Center’s (JSC) Astromaterials Research and Exploration Science (ARES) Division. Her research interests include SIMS/NanoSIMS and volatiles (H, C) in differentiated planetary materials.

In addition to her research, she is also an advocate for science outreach. Jordyn-Marie works to bridge the research efforts of the department with public interest and promote STEM within the community.

Before Jordyn-Marie joined JSC, she completed her undergraduate degree at Boston University in MA. She went on to complete a Master’s thesis on water in eucrite, angrite, and ureilite meteorites using SIMS at Wesleyan University in Middleton, CT.

Advice from Jordyn-Marie:

“What can I learn and apply from this?”

CAREER HEXAGONS

I love learning about water in the solar system by studying meteorites.

My hobbies include hiking, rock climbing, trying new foods, and cooking for my family. As a first-generation college student, I didn’t have many role models to look to while I was in my STEM courses. Now, I actively work to mentor other students.

As an African American woman, I am proud to be a planetary geochemist. My professor, Mary Gallion, is a fellow Black woman in planetary science and a mentor for me.

I’m from Connecticut. I studied chemistry as an undergraduate and planetary science in graduate school.

I love learning about water in the solar system by studying meteorites.
CAREER HEXAGONS (blank)
## NASA’s New Frontiers and Discovery Sample Return Missions

<table>
<thead>
<tr>
<th>Mission Name &amp; Patch</th>
<th>Target Solar System Object</th>
<th>Mission Spacecraft</th>
<th>Sample Collector</th>
<th>Collected Samples</th>
<th>Did You Know?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STARDUST</strong></td>
<td>Visible “glowing” halo, tail, or jet(s).</td>
<td>Two parallel solar array panels.</td>
<td>Looks like a metal ice cube tray.</td>
<td>Samples look like tadpoles or long, linear tracks.</td>
<td>Space is Dusty!</td>
</tr>
<tr>
<td></td>
<td>Icy, dusty body.</td>
<td>Has a tennis racquet-like collector.</td>
<td>Multiple bluish colored rectangles.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Genesis</strong></td>
<td>The main source of energy for Earth.</td>
<td>Two solar array panels and multiple circular collectors.</td>
<td>Looks like a honeycomb.</td>
<td>Samples are broken wafer pieces with embedded solar wind.</td>
<td>Salvaging the Science after a Hard Landing</td>
</tr>
<tr>
<td></td>
<td>Contains 99% of the matter in the solar system.</td>
<td>Looks similar to a watch.</td>
<td>Made of multiple shiny 6-sided (hexagonal) wafers of different colors.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OSIRIS-REx</strong></td>
<td>A rocky body.</td>
<td>Two squarish solar array panels.</td>
<td>Circular object at the end of a long “arm”.</td>
<td>Samples will be small rocks and dust.</td>
<td>Bennu: Orbit and Relevance</td>
</tr>
<tr>
<td></td>
<td>This object is taller than the Empire State building.</td>
<td>Looks like a bee or wasp.</td>
<td>Extends down from the bottom of the spacecraft.</td>
<td></td>
<td></td>
</tr>
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</table>

After learning details about the above sample return missions, consider designing your own future sample return mission!
## LET’S DISCOVER NEW FRONTIERS!

**NASA’s New Frontiers and Discovery Sample Return Mission**

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<th>SAMPLE COLLECTOR</th>
<th>COLLECTED SAMPLES</th>
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<td>Bennu (Asteroid)</td>
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**After learning details about the above sample, consider designing your own future sample-return mission.**

**Match the cards in this row with their description above.**

[Explore more at Astromaterials Research and Exploration Science (ARES) at NASA Johnson Space Center in Houston, TX](https://ares.jsc.nasa.gov)
ASTROMATERIALS 3D
A virtual library for exploration and research of
NASA's space rock collections

APOLLO LUNAR COLLECTION

ANTARCTIC METEORITE COLLECTION

VISIT APOLLO COLLECTION

VISIT METEORITE COLLECTION

Sample LDN 0410237
Every Rock Tells a Story

Antarctic Meteorite Sample GRO 17099 was collected by the ANSMET team in 2017 from the Grosvenor Mountains in the Transantarctic Range and has not been studied yet, leaving the formation of GRO 17099 an unexplored mystery. The sample is a subsample of the original GRO 17099, labelled Subsample GRO 17099,0.
DOWNLOAD AND PRINT YOUR OWN 3D MODEL!

Scroll down on sample page for details!

**Download Data**

**3D Model**
Download this sample's textured 3D model at two different mesh resolutions in OBJ format. The specific parameters of this sample's model can be found in the tables to the right. A more detailed description of these meshes is included within the ZIP file.
1. Meteorite Discovery Board
2. Chatterboxes
3. Career Hexagons
4. Let's Discover New Frontiers
Get Involved!

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Thank You