



A monthly publication of the Clear Lake Gem & Mineral Society

VOLUME 47

December 2021

NUMBER 12



**NEXT MEETING: MONDAY, December 13, 2021**

TIME:

LOCATION:

**6:30 p.m.**

**Kelley's Country Kitchen**

**1502 W. Main St.**

**League City, Tx 77573**

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NASA will receive Asteroid Sample from Japan.	3-5	We are going to have our Annual Christmas Dinner. Please come and bring your friends and family members to celebrate this joyous season. This dinner celebration is <b>FREE</b> to all attendees, the club will be picking up the tabs so there is no reason for not coming and join us. There will be door prizes.
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### MINUTES OF THE November CLGMS GENERAL MEETING

We, as a club, need to have more information and members participation on tending the club's tables at the HGMS show next year.

Christmas dinner location was decided and encouraged all members + their families and friends to attend. This will be the club's last meeting of the year and celebrating the joyous holidays. **FREE** to all attendees.

### MINUTES OF THE December CLGMS BOARD MEETING.

David - will order more postcards, posters and coupon booklets for the Feb. 2022 show.

The Steve F. Austin College will have their tables at the show to promote the school.

Sandra – so far, there are 27 vendors (132 tables) have returned with payments confirmation for the Feb. 2022 show. More to confirm.

### **Christmas Party**

Since our club's general meeting place (at the library) cannot accommodate for our Annual Christmas Party, the board decided to change the venue.

Our club's Annual Christmas Party will be held on **MONDAY, DECEMBER 13, 2021 at 6:30 pm** (Please note the date and time) at:

**Kelly's Country Kitchen**  
1502 W. Main FM 518  
League City, TX 77576

The club will be paying for these meals – Please come and join us bring your family for this Joyous season of love and blessings.

**Our next show will be February 26-27, 2022.**

### **Upcoming events - We are looking forward to the following programs.**

Christmas family dinner and raffle/door prizes

Please check out our Facebook page: **Clear Lake Gem and Mineral Society.**

### **Field Trips Announcement**

Currently – no field trips are scheduled.

If you have a good location for our club field trip – please contact:  
[annabel.brownfield@gmail.com](mailto:annabel.brownfield@gmail.com) or call/text: 281-486-1866.

In case you miss the news.

## NASA Receives Special Cosmic Delivery of Asteroid Sample from Japan

Nasa.gov

Dec 6 , 2021

Just as fossils hold clues to the history of life, asteroids hold clues to the history of the solar system. Rare samples collected from the surface of an asteroid by NASA and its international partners are helping to decipher these clues.

Now, scientists in the Astromaterials Research and Exploration Science (ARES) Division at NASA's Johnson Space Center in Houston are among those able to study samples retrieved by the Japan Aerospace Exploration Agency's (JAXA) Hayabusa2 spacecraft and returned to Earth in late 2020.

JAXA is sharing a portion of these samples with NASA, and in exchange, NASA will provide JAXA a percentage of a sample of asteroid Benu, when the agency's OSIRIS-REx spacecraft returns to Earth from the space rock in 2023.

NASA received 23 millimeter-sized grains and 4 containers of even finer material from Ryugu -- 10 percent of the total collected -- from JAXA on Nov. 30. A JAXA official and a JAXA scientist delivered the asteroid fragments to Johnson, meeting with agency team members to complete the sample transfer and receiving training on safe handling procedures for their portion of the OSIRIS-REx samples.

"This is an exciting opportunity to amplify science return through international cooperation," said Lori Glaze, Planetary Science Division director at NASA Headquarters. "The collaboration will help both countries get the most out of their returns and share the responsibility of sample curation independently crosscheck results. JAXA's contribution is a welcomed addition to the ARES collection of extraterrestrial materials and will provide researchers important new samples wealth of information to examine for generations to come."

The JAXA sample was placed in a cleanroom dedicated to Ryugu research. The ARES facility includes a unique, state-of-the-art laboratory suite for the study of extraterrestrial materials. The team first documented the regolith using high-resolution photography, and then stored the samples in a glovebox filled with dry nitrogen gas. This gas protects the sample from breaking down in Earth's naturally humid and subtly acidic atmosphere. It also protects pores of gas within the sample for future study.

The ARES facility at Johnson houses the world's largest collection of astromaterials from the solar system under one roof, including samples from asteroids, comets, Mars, the Moon, Sun, and dust from our solar system and beyond. Scientists use world-class laboratories to perform research on planetary materials and the space environment to investigate the origin and evolution of our solar system, the universe, and the possibilities of how life might form on other planets. Additionally, researchers participate in robotic planetary missions, support human spaceflight activities on board the International Space Station, and assist in the design of next-generation exploration spacecraft.

Asteroids are debris left over from the dawn of the solar system. The Sun and its planets formed from a cloud of dust and gas about 4.6 billion years ago, and asteroids are thought to date to the first few million years of solar system history. More data are needed to understand how the solar system's evolution exactly unfolded. Sample returns from asteroids help provide some of that data.

"Sample returns are the gifts that keep on giving," said Keiko Nakamura-Messenger, ARES planetary scientist and sample curator. "Advancements in technology and methodology will continue to help scientists gather data from sample returns in ways once thought impossible. We're still studying Apollo samples."

Ryugu belongs to a class of asteroids called carbonaceous, or C-type, asteroids. C-type asteroids are rich in water, carbon, and organic compounds from when the solar system formed. Researchers suspect that bits of C-type asteroids that crashed into Earth as meteorites delivered the raw ingredients of life to Earth in the early solar system.

Scientists have surveyed thousands of meteorites that have been found on Earth, many of which also likely came from C-type asteroids. However, analyzing these rocks is challenging due to Earth-based contaminants, and determining which meteorites came from which asteroids is a challenge. Although missions like Hayabusa2 and OSIRIS-REx are difficult to collect in space and get back to Earth, samples retrieved directly from an asteroid like Ryugu are uncontaminated and tell us about known locations in the solar system.

“More science can be conducted with directly collected asteroid samples because we know where they came from. Plus, we’re directly analyzing the sample rather than scanning the asteroid from afar,” explained Nakamura-Messenger. “This allows us to use extremely sensitive techniques to reveal the tiniest concentrations of organic compounds potentially present in the samples. The results may shed light on how the solar system evolved and life originated.”

The delivery marks the end of a long journey for the Ryugu sample. JAXA launched Hayabusa2 in December 2014 to collect samples from Ryugu. After arriving at the asteroid, Hayabusa2 deployed two rovers and a small lander on the surface. Then, in February 2019, Hayabusa2 fired an impactor into the asteroid to create an artificial crater. This allowed the spacecraft to retrieve a sample beneath Ryugu’s surface.

“Exposure to galactic and solar cosmic rays takes away water and alters the surface of asteroids,” Nakamura-Messenger. “We believe fresh material resides beneath Ryugu’s surface that will be key to understanding its true nature.”

Hayabusa2 returned to Earth with the Ryugu sample in December 2020. Scientists at Johnson analyzed a microscopic sample from Hayabusa2 in June of this year before receiving the entire allotment from JAXA last week.

The spacecraft itself is now on an extended mission to a smaller asteroid, called 1998 KY26. Meanwhile, NASA's OSIRIS-Rex spacecraft is on track to return the sample from the carbonaceous asteroid Bennu to Earth in 2023. Ryugu, Bennu, and 1998 KY26 are considered “near-Earth asteroids,” meaning they likely formed within the asteroid belt between Mars and Jupiter but have since drifted closer to Earth.

The exchange of the Ryugu and Bennu samples is part of a larger initiative by NASA to partner with JAXA and other countries to push the frontiers of space exploration.

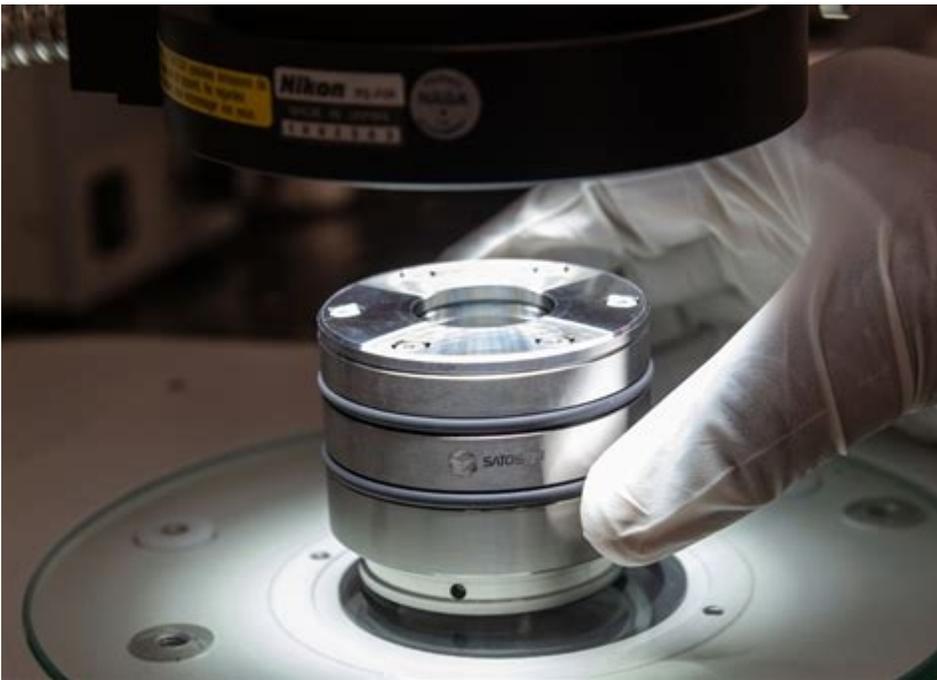
“The future of space exploration will require collaboration among nations,” said Grossman. “The sample exchange between NASA and JAXA marks a step toward achieving this goal.”

The Ryugu fragments provided by JAXA will be available to scientists across the world upon request. Analysis of the samples is ongoing. ARES researchers and other scientists not involved in the exchange will be able to submit requests to study asteroid fragments to the sample curator at Johnson.

Currently, ARES is upgrading and expanding facilities to support new capabilities required to investigate inbound collections (most notably asteroid samples from Hayabusa2 and OSIRIS-REx). A new annex to Johnson’s Building 31 complex will be complete in 2023 in time to host the OSIRIS-REx science team for preliminary examination and initial sample analysis when these samples return to Earth.

NASA also plans to work with JAXA on the Martian Moons Exploration, or MMX, spacecraft. JAXA intends to send the spacecraft to the Martian moons Phobos and Deimos, retrieve a sample from the surface of one of them, and return it to Earth around 2029. Insights gained from the mission are expected to clarify how the Red Planet and Martian moons formed and evolved.

JAXA will also play a role in supporting future missions to the Moon under NASA's Artemis program. NASA formalized an agreement this year to work with the Japanese government to help develop an outpost orbiting the Moon, called Gateway. The outpost will house commercial and international partners during Artemis missions, and enable crews to bring back samples from the lunar surface to Earth.



**SCFMS and MEMBER CLUB GEM SHOWS**

<p><b>Dec:</b> <b>DeRidder (Leeville, LA)</b></p>	<p><b>Jan:</b> <b>Fredericksburg Rockhounds, Fredericksburg, TX 01/15-16/22, Lady Bird Johnson Park</b>  <b>East Texas Gem &amp; Mineral Society, Tyler, TX 01/21-23/22, Tyler Rose Garden Center</b></p>	<p><b>Feb:</b> <b>Williamson County Gem &amp; Mineral Society, Georgetown, TX</b> <b>Usually 2nd weekend in Feb., San Gabriel Park Community Center</b>  <b>Clear Lake Gem &amp; Mineral Society, Houston, TX 02/26-27/22, Pasadena Convention Center</b>  <b>Hi Plains Gem &amp; Mineral Society, Plainview, TX 02/22-23/22, Ollie Liner Center</b></p>	<p><b>Mar:</b> <b>Gulf Coast Gem &amp; Mineral Society, Corpus Christi, TX 03/05-06/22, R.M. Borchard Fairgrounds, Robstown, TX</b>  <b>Big Spring Prospectors Club, Big Spring, TX</b> <b>Usually 1st weekend in Mar., Howard Co. Fair Barn</b>  <b>Southwest Gem &amp; Mineral Society, San Antonio, TX 03/12-13/22, venue to be announced, San Antonio, TX</b></p>

STONEY STATEMENTS  
 Clear Lake Gem and Mineral Society, Inc  
 PO BOX 891533  
 Houston, Texas 77289

Meeting 3rd Tuesday of the Month  
**7:00 P.M.**  
 League City Library  
 100 W Walker St, League City, Tx 77573



**Member of**

**Next Annual Show**

February 26-27, 2022

Pasadena Convention Center

CLGMS is on the Web:

<http://www.clgms.org>

FACEBOOK: CLEAR LAKE GEM AND MINERAL SOCIETY.



American Federation of Mineral Societies

South Central Federation of Mineral Societies

**Clear Lake Gem and Mineral Society, Inc**

MEMBER: American Federation of Mineralogical Societies and South Central Federation of Mineral Societies

PURPOSE: To promote education and popular interest in the various earth sciences; in particular in those hobbies dealing with the art of lapidaries and the earth sciences of minerals, fossils and their associated fields.

2021 OFFICERS:	President	John Caldyne	832-282-4270
	Vice President	Cynthia McGowan	281-546-2662
	Secretary	Christina Rankin	281-723-5408
	Treasurer	Morgan Davies	281-224-2444
	Program Director	VACANT	
	Board of Directors:	Sandra Christiansen	Jerry Newberry
		Jim Edwards	Jim Hawkins
Donna Nelson			
Newsletter Editor	David Tjiok		

Annual Show 2021 .....	Sandra Christiansen	Membership.....	David Tjiok
Constitution & Bylaws.....	Sara Tanner	WWW System Admin..	Mike Flannigan
Community Benefits.....	Charlie Timme	Refreshments.....	John Caldyne
Historian.....	David Tjiok	Education/Field Trips.....	Annabel Brownfield
Publicity.....	Annabel Brownfield		
Facebook.....	Cynthia McGowan		

Membership Dues Jan. to Dec. 2021: Adult \$15:00, \$5.00 per additional adult at same address, Junior \$5.00, \$5.00 per member with adult at same address, Family Dues \$20.00 (4+) at same address. Send Dues to CLGMS, PO BOX 891533, Houston, TX, 77289