

TAR HEEL



ROCKHOUND

JULY 2024

Catawba Valley Gem & Mineral Club, Inc.

2024 Officers and Committees

President:	Tracie Jeffries 828-430-1341	Education:	George Max 828-328-9107
Vice President:	Rick Glover 828-446-7634	Show Chairman:	Dean Russell 828-303-1448
Treasurer:	Terry Russell 828-303-1563	Scholarship:	George Max 828-328-9107
Secretary:	Dean Russell 828-303-1448	Eastern Fed. Liaison:	
Editor:	Tracie Jeffries 828-430-1341	Southeastern Fed. Liaison:	
Field Trip:	Tina Lakhotia 727-688-1068		

Club Address: PO Box 2521, Hickory NC 28603-2521
 Regular Meetings: Second Tuesday, 7:00 PM
 St. Aloysius Catholic Church, 921 2nd St. NE Hickory, NC
 Annual Dues: Family, \$25, Individual, \$18

The purpose of the Club is to increase the individual's knowledge of the earth sciences and to aid in the development of lapidary and related arts and skills; to promote fellowship and exchange of ideas; to hold exhibitions, contests, lectures and demonstrations for educational purposes; to help interest more people in the gem and mineral hobby; and to capture and preserve the beauty of nature, the arts, and the works of man.

CATAWBA VALLEY GEM AND MINERAL CLUB, INC.

Web Master: Mike Streeter

<http://www.cvgmc.com>

Editor: Tracie Jeffries,
 3118 Barus Street, Valdese, NC
 botanynerd89@gmail.com

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PRESIDENT'S REPORT

Hello Fellow Members,

Last week I meet a few people at the Sink Hole Mine near Micaville. We had a good time and found a few nice specimens. But I was surprised at how quickly I became over heated. I had to drink some water and sit down for a few minutes in the shade. Just remember as you go rockhounding this summer be careful and know the signs and symptoms of heat exhaustion and heat stroke. Signs and symptoms of heat exhaustion may include: muscle cramps and spasms, being faint/dizzy, feeling weak /tired, headache, nausea, and cool, moist skin. When this occurs stop any activity and seek a cool place to rest, drink plenty of water, loosen your clothes, and if possible, apply moist cloths to your face and skin. If this does not help seek medical help. Heat stroke is a life threatening condition and you should call 911 immediately. Symptoms may include warm, dry skin, vomiting, diarrhea, mental confusion, seizures, and even loss of consciousness. While you are waiting for medical help, you or the person affected, need to get to a cool area, rest, loosen clothing, pour water over the body, and **DO NOT DRINK ANY FLUIDS**. Knowing what is happening and what to do may save your life or someone else's life!

Tracie Jeffries

CVGMC MINUTES FOR JUNE 11, 2024

Call to Order:

The June 11, 2024 meeting of the CVGMC was called to order by President Tracie J. at 7:00 PM.

Visitors: Don O., Joanne G., David I., Tori I., Ron T.

Program: Part II of a program on LIBS

Minutes: A motion was made by Harry P. and seconded by Terry R. to accept the May 14, 2023 minutes. Motion was passed by the Club.

Treasurer Report: Bank balance was reported.

Education Committee: None

Show Committee:

1. The theme of the October 18-20, 2024, Show will be “An Explosion of Color” (The Colorful World of Rocks & Minerals)
2. The Club will probably look into doing grab bags for the October Show in September. Please remember to save items while you collect this summer for the grab bags.

Field Trip Report:

1. Kentucky Labor Day Trip: Staying at the Red Roof Inn in Danville, KY on Friday and Saturday night and the Wingfield Inn and Suites in Elizabethtown for Sunday night. Next month’s Tar Hell Rockhound will have more information.
2. Diamond Hill Mine – looking for members to go, so Tina can set up a trip. Please contact Tina if you are interested.

Old Business: None

New Business: We need a program for the July meeting. Please contact Tracie J. if you can provide one.

Announcements: The October Club meeting will be the Annual CVGMC Picnic, starting at 6:30 PM, at Harry and Janice P.’s house. More information to come in future Tar Heel Rockhound newsletters.

Closing of Business: The meeting was adjourned at 8:07 PM

Respectfully Submitted,
Dean Russell, Secretary

JULY PROGRAM

Our next meeting will be July 9th at 7:00 PM. The program titled, "Round and Round We Go", will focus on round rock oddities. Do you know the difference between concretions, geodes, thunder eggs, nodules, and vugs? Attend the meeting and learn more about these terms and view beautiful and amazing examples

GEOLOGY MADE SIMPLE: ICELAND SPAR

By Tracie J.

Calcite is a carbonate mineral (CaCO_3) commonly found through-out the world in sedimentary, metamorphic, and igneous rock environments. It is extremely variable in color and form but three main traits can help identify calcium specimens.

1. Calcium is relatively soft, a 3 on the Mohs hardness scale. This means it is too hard to scratch with a fingernail (2.5), but can easily be scratched with a copper penny (3.5).
2. It has three cleavage planes, so look for smooth surfaces that reflect light and sharp angles where the planes meet.
3. Calcite reacts strongly to acids. If you place a drop of hydrochloric acid (HCl) or acetic acid (CH_3COOH) on the specimen it will strongly effervesce or bubble.

The general traits of calcium are summarized in Table 1.

This article will focus on Iceland spar and its unique optical properties. Iceland spar is a variation of calcite also known as Iceland crystal, optical calcite, Viking stone, and sun stone (sunstone). Iceland spar was first discovered in the Helgustadir Mine in Eskifjord, Iceland, hence its name. For many years this was the only known source of Iceland spar and was heavily mined. In 1975 the site became a national Icelandic monument and now collecting is forbidden. However, over time, optical calcite was also discovered in other parts of the world such as Australia, Brazil, China, and Russia. In the United States it can be found in Montana, California, and New Mexico. Remember, calcite is highly variable in many of its traits, so what makes Iceland spar so distinctive? High quality Iceland spar tends to be transparent, colorless, flawless, forms rhombohedral crystals (see Images 1 and 2), and displays two optical properties, birefringence and polarization. These last two properties are why it is also called 'optical calcite' and why it was, and still is heavily used in industry and scientific research.

TRAIT	CALCITE
Color	Commonly colorless, white, brown, or gray, but can also be yellow, orange, red, blue, green, black, etc.
Moh's	3
Luster	Vitreous to Pearly
Fracture	Conchoidal
Cleavage	Perfect on 3 planes
Specific Gravity	2.71
Streak	White
Crystal Form/ Habit	800 different crystal habits
Other	Strongly Reacts to HCl (acid test) May be fluorescent

TABLE 1: Basic Characteristics of Calcite



IMAGE 1: "Iceland spar"

<https://www.geologysuperstore.com/product/optical-calcite-iceland-spar/>



IMAGE 2: Due to impurities, other colors may exist such as yellow and pink.

A cleaved rhomb of pink Iceland spar from Mexico (Resource 1)

Iceland spar has many interesting properties associated with light. First, it is a natural polarizing filter (see Image 3). Because of this property, some believe this is the infamous “sun stone” that Vikings used to navigate the North Atlantic. The polarizing effect allowed sailors to see the position of the sun even through clouds, fog, or thick mist. There are many theories on how exactly they used the stone for navigation (see Figure 1).

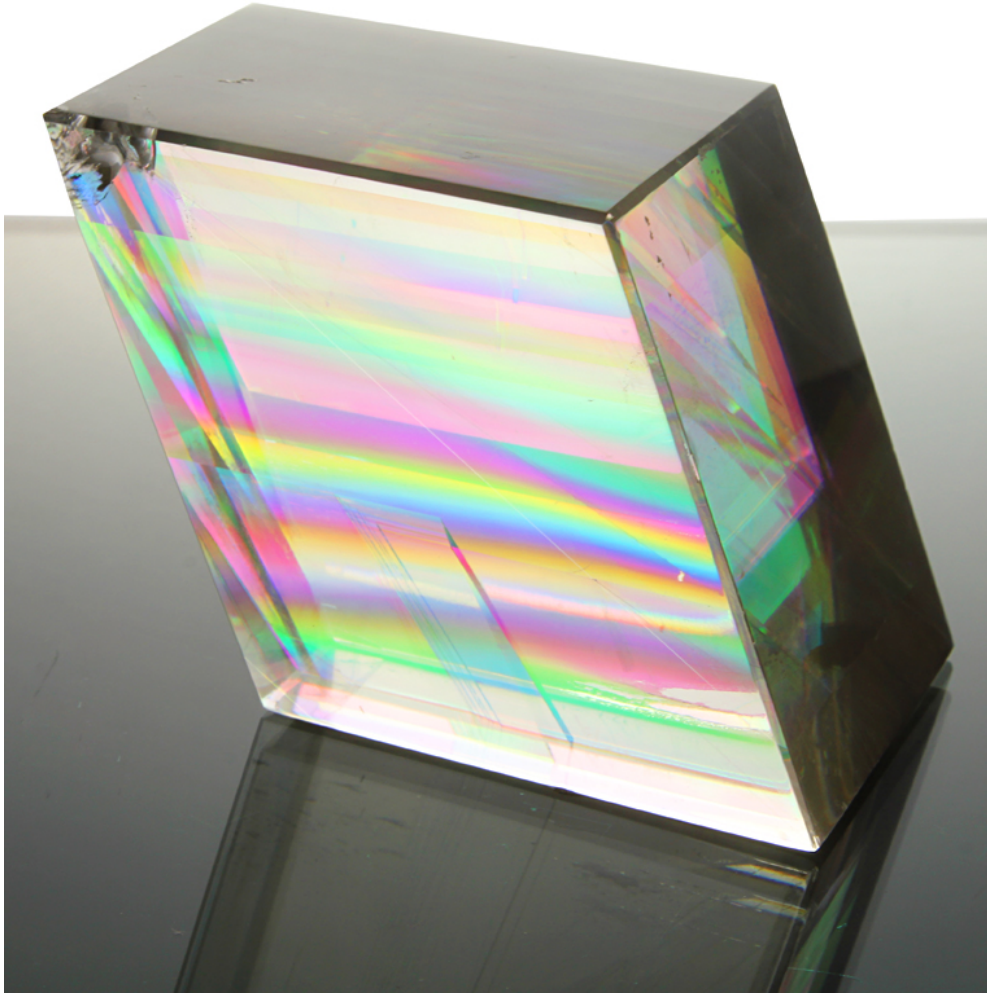
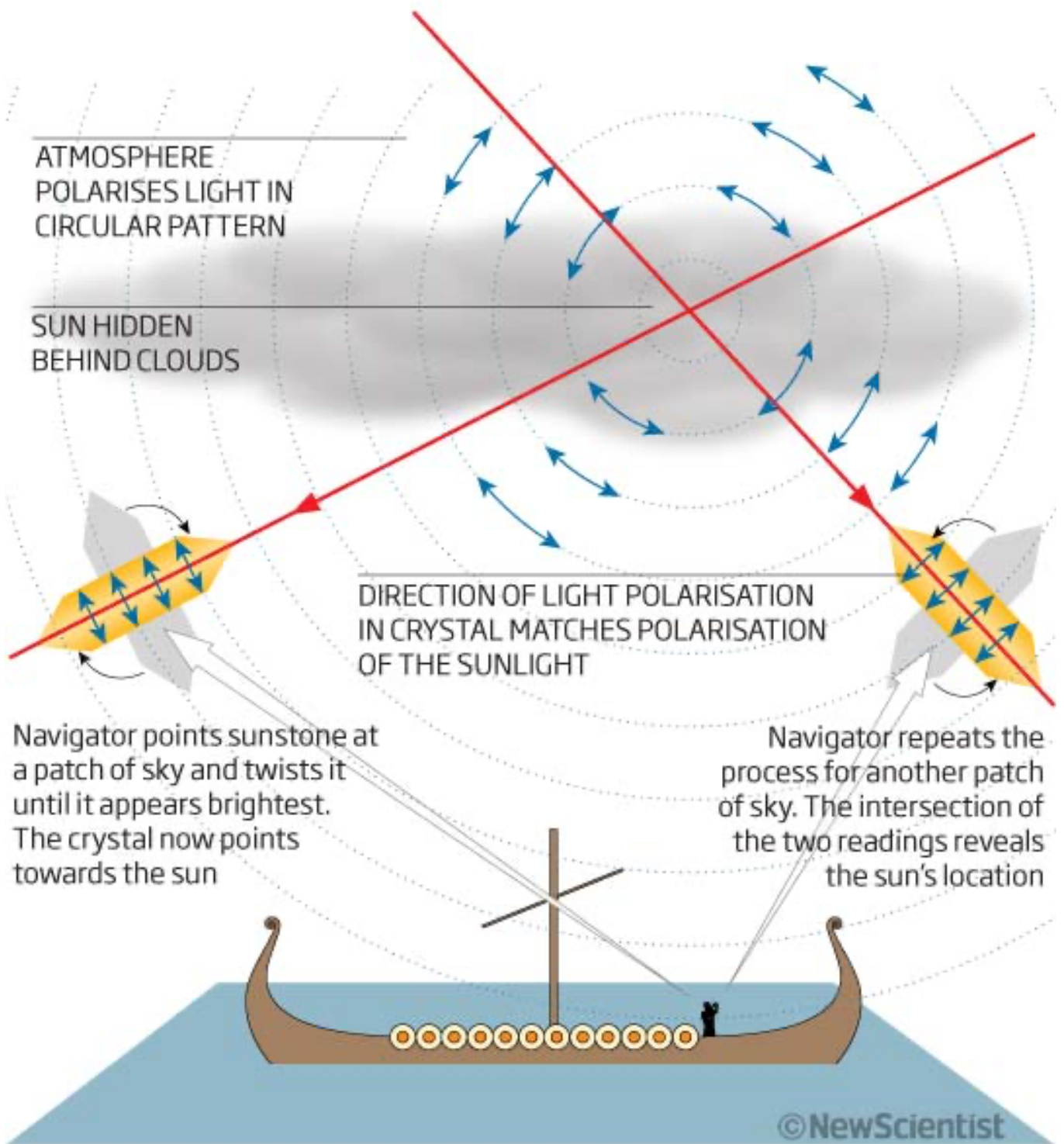


IMAGE 3: Polarized light forms rainbows in polished rhomb of Iceland spar (Resource 1)



How the Vikings could have used crystals called "sunstones", which polarise light, to navigate when the sun was hidden by clouds

FIGURE 1: One theory on how the Vikings used "sunstones" for navigation. (Resource 2)

A second distinctive property of Iceland spar is double refraction or birefringence. This property is due to the arrangement of the carbonate ions in parallel sheets. As light rays travel through the sample, they are split into two beams of light that travel at different speeds. Due to the different speeds the rays are bent at slightly different angles and create a double image (see Figure 2 and Image 4). The thickness and angle of the calcite rhombohedral determines the space between the two images. This property is what makes Iceland spar a popular mineral at gems and mineral shows, especially with children!

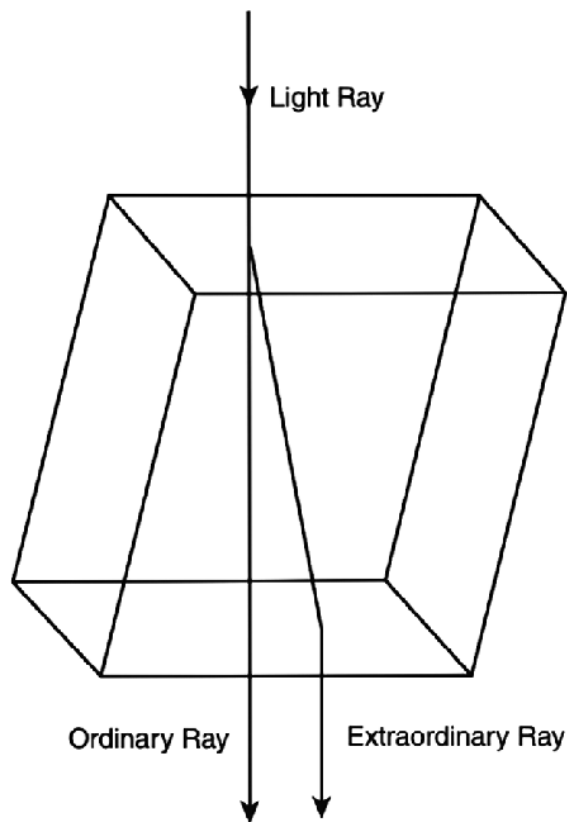


FIGURE 2: When light rays hit calcite crystals at right angles, a single ray will split into two rays creating double refraction. (Resource 3)



IMAGE 4: Double refraction or birefringence (Resource 4)

INTERESTING FACTS:

- Experiments and observations with Iceland spar in the late 1600's by Dutch mathematician and physicist Christiaan Huygens led to one of the first theories that light consisted of waves.
- In 1828, Scottish physicist William Nicol experimented with optical calcite and single-plane polarization. This led to his development of Nicol prisms that helped future scientists develop instruments such as photometers, spectrophotometers, and polarizing microscopes.
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- During WWII, Iceland Spar was used to improve gun sights, specifically in bomb sights and anti-aircraft guns. The US government considered it a strategic resource and expanded the search for new deposits.
- Iceland spar is used for fiber optics, lasers, telescopes, microscopes, and cameras.
- Iceland Spar helped create 3-D imaging.

- Modern research is using optical calcite to make objects invisible by bending light around the object.

RESOURCES:

1. admin. "ICELAND SPAR, Did the Vikings Use It for Navigation? -." *Visiteskifjordur.is*, 26 Oct. 2014, www.visiteskifjordur.is/icelandic-spar/iceland-spar-vikings-use-navigation/.
2. Philip Ball. "Norse Legend? The Viking "GPS" That Relied on Crystals." *New Scientist*, <https://www.newscientist.com/article/mg22530130-500-norse-legend-the-viking-gps-that-relied-on-crystals/>
3. Robinson, Andrew. (2023). 11. Waves of Enlightenment. 10.11647/OBP.0344.11.
4. "What Is Gemstone Birefringence?" *Gem Rock Auctions*, www.gemrockauctions.com/learn/news/what-is-gemstone-birefringence.
5. Cicala, Roger. "Iceland Spar: The Rock That Discovered Optics." *Lensrentals Blog*, 11, Dec. 2013, www.lensrentals.com/blog/2013/12/iceland-spar-the-rock-that-discovered-optics/
6. "OPOD - Viking Sunstone." *Atmospheric Optics*, 16 Sept. 2023, atoptics.co.uk/blog/opodviking-sunstone/

WHAT'S HAPPENING IN OUR AREA

WHAT	WHEN	WHERE
Treasures of the Earth	July 12, 2024	North Carolina State Fairgrounds, Raleigh, NC
Highlands Road Gem Show	July 24-28, 2024	1602 Highlands Rd Open Air Lot Franklin, NC
G&LW Gem Show Franklin	July 25-28, 2024	Watauga Festival Center, 6295 Sylva Rd., Franklin, North Carolina
Macon County Gemboree	July 26-28, 2024	Robert C. Carpenter Community Building, 1288 Georgia Rd./US 441, Franklin, NC
Grassy Creek Mineral and Gem Show	July 28 thru Aug 4, 2024	Parkway Fire and Rescue Events Grounds, 136 Majestic View, Spruce Pine, NC

North Carolina is home to multiple museums, many of which specialize in mining, gems, minerals, and fossils. The Mineral and Lapidary Museum of Henderson County is located at 400 N. Main Street, Hendersonville. Currently the museum is open Monday through Friday 1:00 PM to 5:00 PM and on Saturdays 11:00 AM to 5:00 PM. Please check their website, <https://mineralmuseum.org>, before visiting, because hours change seasonally. The museum has a mix of displays and focuses on North Carolina gems and minerals, especially from Henderson County. They also have different exhibits on loan from various collections, a fluorescent mineral display, the Hendersonville meteorite, and fossils. If you visit, please visit their gift shop and or make a donation to help support their museum because admission is free!

FIELD TRIP OPPORTUNITY

Labor Day Weekend Trip to Kentucky

The club will do its annual collecting trip to Kentucky over Labor Day weekend, August 31 – September 2, 2024.



AGENDA AND WHERE TO STAY

Early Saturday morning we will travel to a local quarry to collect until lunch, then we will travel to a second location in the afternoon to collect geodes. Many participants will spend Friday and Saturday night at the Red Roof Inn Plus in Danville.

Red Roof Inn Plus, Danville

Address: 210 Brenda Ave, Danville, KY 40422

Phone: (859) 236-5525

Very early Sunday morning we will car caravan to a second quarry to collect. You may leave to go home after collecting on Sunday or you can stay another night and return to the same quarry on Monday to collect more material. People who are staying to collect on Monday plan to stay Sunday night in Elizabethtown. Some people are staying at the Wingfield Inn and Suites in Elizabethtown.

Wingfield Inn and Suites in Elizabethtown.

Address: 1043 Executive Dr, Elizabethtown, KY 42701

Phone: (270) 769-3030

Usually in the afternoons people meet in the parking areas of the motels to talk and have a small sell and swap meeting.

No matter where you decide to stay just make sure you have the time and meeting place for each morning so you can follow the lead car to the quarries! Do not be late, they will not wait on you!

WHAT YOU NEED:

You will need to bring your own collecting tools and buckets. Some basic tools would be a geology hammer, a crack hammer, one or more chisels, and a pry bar. Some people also bring portable rock saws. In addition, you will need to have your own safety gear to wear into the quarries. **In the quarries you have to wear long pants, safety helmets, safety vests, and steel toed shoes/boots. You will not be allowed in if you do not have the proper safety equipment!** In addition, you should wear goggles to protect your eyes and gloves to protect your hands from sharp rocks. Make sure you also bring plenty of water to stay hydrated and snacks.

If you have any questions, you can contact Slade.

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**Club Meeting Tuesday
July 9th 7:00PM
St Aloysius Catholic Church
921 2nd Street NE Hickory, NC**

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Tracie Jeffries Editor
PO BOX 2521
Hickory NC 28603-2521
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