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# **General meeting: October 19**

We hope you will join us at our October meeting which will be Monday, October 19 at 7 pm on Zoom. Members will receive a Zoom link in an email. If you have never used Zoom, you might find <u>this video</u> <u>introduction</u> helpful. Do you have questions about the meeting? Contact our Board President, Sandra: ask.sandra@yahoo.com

# Two more field trips

Two field trips are still scheduled for this year. If you would like to find picture jasper, Ed Lehman's excursion on October 24 is for you. Ed is leading another trip on November 21, and they will be searching for dalmation stone.

On <u>page 7</u> you will find a little more about these trips and contact information for Ed.

# About the banner photo

The banner image is a natural piece of translucent quartz with tourmaline. The photo was not labeled with what type of tourmaline it features; the yellowish green makes it appear to be tsilaisite which is a variety of the elbaite species of tourmaline.

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# Juniors - Do you know Greek?

You've probably noticed that many rock hounding words are long, strange and maybe even ridiculous sounding. This is because our language, English, is made of words from around the world. A lot of English is built upon Greek and Latin, and there are many other languages mixed in too. Words that people use become part of English.

To make sense of weird words, we can break them into pieces. Sometimes we recognize a piece because it's in a different word we know. For example, later in this issue there is an



Pyrotechnics - image by Kohji Asakawa

article about pyroelectric crystals. If we break that odd word down we have *pyro* and *electric*. The second part, we already understand.

What about *pyro*? Can you think of words containing that root? Here are a few: pyrite (a mineral), pyrotechnics (a fireworks show), and pyre (a large pile of wood for burning). The common root, *pyr*, is Greek for *fire*. Now, it's easy to see how *pyrotechnics* and *pyre* share that root. Pyrite also contains the root for fire, because when you strike it with steel, you get a spark which can start a fire.

Here are some Greek word roots and their meanir	ıgs.
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Root	Meaning	Examples
pyr	fire	pyroelectric, pyre, pyrotechnics, pyrite
chrom	color	monochrome, chromatic
mono	alone or one	monopoly
di	two or twice	disulfide (the Latin root meaning two is <i>bi</i> , as in <i>bicycle</i> )
tri	three	triangle, tricycle
pleo	more	pleochroism
gon	angle	polygon, pentagon (penta means five; poly means many)
lith	stone	monolith

# Juniors - Greek word puzzle

Now that you know some Greek word roots, you can do this puzzle. Look for words that have the Greek word pieces listed below, and when you find one, cross it off on the puzzle picture. You will find one, two, or three words in the puzzle for each Greek root below.

There are check boxes for each word.

pyr  $\Box$   $\Box$ 

chrom  $\Box$ 

mono 🗆 🗆

di  $\Box$   $\Box$   $\Box$ 

tri 🗆 🗆

pleo 🗆

gon 🗆

lith 🗆 🗆

When you are done the words that are not crossed off give you a clue to the puzzle's answer. Unscramble the first letter of the remaining words to answer this question:

What sound do pyrotechnics make?



Puzzle answers are on page 12

# October Birthstones - Opal and Tourmaline

If you were born in October, happy birthday! You have two beautifully colorful birthstones: opal and tourmaline. In this issue we will focus on tourmaline.

# **Tourmaline basics**

Category: cyclosilicate

Formula: (Ca,K,Na)(Al,Fe,Li,Mg,Mn)<sub>3</sub> (Al,Cr, Fe,V)<sub>6</sub> (BO<sub>3</sub>)<sub>3</sub> (Si,Al,B)<sub>6</sub> O<sub>18</sub> (OH,F)<sub>4</sub>

Crystal system: trigonal

Crystal class: ditrigonal pyramidal

Mohs: 7.0 - 7.5

Magnatism: high (schorl)

Cleavage: none

Fracture: uneven, small conchoidal, brittle

Luster: vitreous, sometimes resinous

Streak: white

Color: usually black, but can be colorless, brown, or any color of the rainbow

Diaphaneity: translucent to opaque

Pleochroism: moderate to strong

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# Tourmaline stew

Tourmaline is not a single mineral, but a group of isomorphous minerals with identical crystal lattices. The complex formula (see the sidebar) reveals how

Tourmaline

the numerous minerals can form slight variations in the stew. Each set of parentheses identifies a choice of ingredients. With so many choices, the total number of variations is great. Gemologists divide tourmalines into 11 species based on their chemical compositions.

Tourmaline varieties come in many colors, and the most common color is black. Here are some of the varieties, their colors, and the minerals they are rich in.

- schorl species black iron
- dravite species dark brown magnesium
- elbaite species any color (it's allochromatic) lithium and sodium Na(Li<sub>1 5</sub>Al<sub>1 5</sub>)Al<sub>6</sub>(BO<sub>3</sub>)<sub>3</sub>[Si<sub>6</sub>O<sub>18</sub>](OH)<sub>3</sub>(OH)
  - rubellite red to reddish purple
  - indicolite blue or teal
  - verdelite green
  - tsilaisite yellowish green manganese
  - achroite colorless lithium and sodium

### Color treatments for tourmaline

Often treatments are applied to enhance the color. Dark tourmalines can be heated to lighten or change the color. For example, purple copper-bearing stones can be heated to transform them into a gorgeous bluegreen hue. Pale pinks can be irradiated to become deep magentas or reds.



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"Elbaite with Quartz & Lepidolite on Cleavelandite" By <u>Rob Lavinsky, iRocks.com</u> Copyright: CC-BY-SA-3.0

# Gemstone of the rainbow

Ancient Egyptian lore includes a story about tourmaline. During its long journey from the center of the earth, tourmaline glided through a rainbow collecting its colors. That is why tourmalines are sometimes called pieces of a rainbow.

The name, *tourmaline*, comes from the Singhalese words, *tura mali*, which mean "stone with mixed colors".

# Paraiba tourmaline

The rainbow of colors in tourmaline gemstones are primarily from iron, manganese, chrome and vanadium. But the vivid blues and greens of Paraiba gems are thanks to large amounts of copper and sometimes a bit of manganese. This variety is part of the elbaite species.

Paraiba tourmaline was first discovered by Heitor Dimas Barbosa who, convinced he would find something new and extraordinary, had mined a Paraiba hill in Brazil for five years before he found a deposit of this new type of tourmaline.

In high concentrations copper creates radiant blue, turquoise, and green hues. Violet and red tones appear when manganese is present.

Stonecutters often carefully select the parts of the crystal to eliminate in order to strengthen the intensity of the color.



Paraiba tourmaline gemstone by <u>Mark Davis</u> copyright: <u>CC BY-NC-ND 2.0</u>

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Watermelon tourmaline slices by <u>Anne Petersen</u> copyright: CC BY-NC-ND 2.0

# Watermelon tourmaline

Watermelon tourmaline is a gorgeous color variation of the elbaite species of tourmaline. The best pieces of this gemstone have a pink to red center surrounded by green, so it resembles watermelon.

# From magma to gemstone

Tourmaline forms like many gems, in the cracks formed by cooling magma. These

cracks are filled by solutions of water and minerals, such as iron, manganese, and lithium. Over time these minerals form crystals of tourmaline and other stones.

As the crystals are slowing growing the mineral solution can change with some minerals being used up and others mixing in. Rain water seeping down into the spaces where crystals are forming can bring new minerals or can change the concentration of minerals. Because the minerals determine the crystal colors, the crystals usually morph from one color at one end and another color farther along.

Here is how high concentrations of minerals affect the colors:

- iron dark blue or black
- manganese red, pink, brown, or yellow
- chromium emerald green
- lithium blue, green, red, yellow, pink

Most elbaite tourmaline crystals are allochromatic, which means that trace amounts of a mineral can change the color. This is why you will rarely find an elbaite tourmaline crystal of a single color.

However, the tsilaisite variety is idiochromatic as is schorl. Their chemical compositions create consistent colors: black in schorl and yellowish green in tsilaisite.



Fluorite on schorl tourmaline crystals by <u>Rob Lavinsky</u> copyright: CC BY-SA 3.0

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# Field trips in 2020

The <u>Washington State Mineral Council</u> offers many field trips each year. The trips were cancelled for many months due to the pandemic, but now they are happening again. Please remember to stay 6 feet apart when possible and wear masks when closer than 6 feet.

### Contact the host a week before the trip

At least a week before the trip, please contact the host and ask about

- New or updated details about the scheduled trip
- Whether you will need a Discover Pass, Trailhead Pass, or Forest Pass
- Fees
- Maps and directions

### Club contact information

Marysville Rock Club and Darrington Rock Club Ed Lehman wsmced@hotmail.com home: 425-334-6282 cell: 425-760-2786

NOA club: Tony Johnson 253-863-9238

Puyallup Valley Gem and Mineral Club: Dennis Bachchelor 360-870-8741

All Rockhounds Pow Wow

Larry Vess vessel3755@gmail.com 253-473-3908

### Bring with you on the trip

Arrive at the meeting place 30 minutes before the start time, and bring

- Mask to protect from COVID-19 transmission
- Food and drinks for the day

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- Appropriate clothing for any possible weather
- Cash if there are fees
- Tools
- Map and directions
- First aid kit

# Get inspired for a rockhounding adventure

The Washington State Department of Natural Resources offers a plethora of <u>rockhounding</u> information. If you are curious where gems, fossils, and petrified wood can be found, check out their <u>map</u>.

Many of the sites on the map are not places you can collect specimens. Their site warns us:

"Before you set out, determine land ownership of your area of interest, learn the permissible collection activities and that owner's rules governing where you can collect, what you can and cannot collect, and how it may legally be collected."

Still, the map is fun to explore while searching for your favorite rocks, gems, or fossils.

Date	<b>Rock or Mineral</b>	Location	Details
10/24	Picture jasper	Money Creek Skykomish	Host: Marysville Rock Club 9 am Money Creek Campground Tools: dig and river bar pick
11/21	WA dalmatian stone, chert	Blanchard Hill	Host: Darrington Rock Club 9 am I-5 exit 240, Gas Mart Tools: hard rock

# Calendar

Date	Event
Oct. 19 at 7 pm	Meeting
Nov. 16 at 7 pm	Meeting
Dec. 14 at 6:30	Meeting: Holiday Party

# **Rock of the Month**

Now is a good time to think about giving a Rock of the Month presentation when our meetings resume. Do you have expertise in geology, rock hounding, or some other

topic that would interest our members? It might be fun to take some time now and plan a presentation. Contact a Board member to propose your idea.

# Washington State Mineral Council

Our club, along with many other rock and gem clubs in the state, is a member of the <u>Washington</u> <u>State Mineral Council</u>. This organization helps us by advocating for access to public lands and for beneficial land use policies compiling and sharing maps and other information publicizing shows and field trips so members learn about events at other clubs.

# Words of the Month

### allochromatic

A mineral is allochromatic if trace amounts of impurities can tint the crystals. Elbaite gemstones are allochromatic.

### idiochromatic

A mineral is idiochromatic if the composition produces a consistent and predictable color. Black schorl and yellow tsilaisite are idiochromatic.

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Carved meerschaum pipe from Pennsylvania Photo by <u>loe Haupt</u>

# **Pyroelectric crystals**

Tourmaline has a power that most crystals do not have: it's pyroelectric. You can make a tourmaline crystal electrically charged by heating it. One end of the crystal acquires a positive charge, and the other end, a negative charge. This causes the crystal to oscillate.

Centuries ago Dutch pipe smokers used tourmaline to clean their carved meerschaum pipes. A Dutchman would heat a tourmaline crystal and insert it into his pipe. The electrically charged crystal attracted the ash from deep inside the pipe.

# Show and Tell

Do you have a couple rocks or minerals you'd like to share with us? They might be interesting rocks you found on a rock hounding trip or specimens you saved long ago because they were beautiful or interesting.

You may share your Show and Tell stories during the zoom meeting or here in the newsletter. Send a photo and a short blurb about what makes these rocks interesting to newsletter editor, Nancy Samuels at <u>mrgc@nancysamuels.com</u>.



# **Tourmaline Trivia**

- 1. elbaite
  - a. a species originally found in Elba, Italy
  - b. bait used for eel fishing
  - c. crystals usually form in multiple colors
  - d. two of the above
- 2. called "a piece of the rainbow" because
  - a. ancient Egyptian lore
  - b. prettiest when wet
  - c. acts as a prism
  - d. none of the above
- 3. dravite
  - a. popular for promotional carvings with Belgian chocolatiers
  - b. discovered in the Dravian Hills
  - c. a species that is usually dark brown
  - d. two of the above
- 4. achroite
  - a. named for the Greek word for "colorless"
  - b. yellowish green in color
  - c. one of the 11 species
  - d. two of the above
- 5. the Mohs scale puts tourmaline at about the same hardness as
  - a. a penny
  - b. ruby
  - c. quartz
  - d. calcite
- 6. verdelite
  - a. green, like salsa verde
  - b. a type of elbaite
  - c. allochromatic
  - d. all of the above

- 7. indicolite
  - a. always an indigo color
  - b. blue to teal elbaite
  - c. an indicator for likely gold deposits
  - d. two of the above
- 8. rubellite
  - a. a rare type of schorl
  - b. red to reddish purplec. used for abrasive
  - rubbing d. all of the above
- 9. allochromatic
  - a. crystal colored by its trace minerals
  - b. appearing as different colors at different angles
  - c. named for allosaurus
  - d. two of the above
- 10. pleochroic
  - a. era 500 million years ago
  - b. appearing as different colors from different angles
  - c. species named for the Pleiades constellation
  - d. two of the above
- 11. pyroelectric gems
  - a. are used as pipe cleaners
  - b. become electrically charged when heated
  - c. are dangerous and banned in some places
  - d. two of the above
- 12. paraiba
  - a. discovered in a hill in Paraiba, Brazil
  - b. first found by Barbosa
  - c. coveted for its vivid hues
  - d. all of the above

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# **Board meeting**

The board is holding email meetings until it is safe for them to meet again. If you have questions for the board, you are invited to ask our Board President, Sandra.

# **Connect with us**



## Rockhounding Coordinates Needed

The Washington State Mineral Council needs the GPS coordinates of the collecting sites in the state.

In an effort to make the map booklets as accurate as possible the Mineral Council is asking for everyone to record GPS readings while on field trips

The data can also be used to help in our efforts to keep the collecting areas open.

Please email coordinates you have to the Mineral Council: mineralcouncil@zoho.com



Visit our web site: http://www.maplewoodrockclub.com/

Connect with us on Facebook: <u>https://www.facebook.com/MaplewoodRCG</u>

Our address is 8802 196th St SW, Edmonds, Washington 98026

## Join our two new Facebook groups

Join us in a new group: MRGC Sales and Trades

Maplewood Rock & Gem Club

# **Puzzle Answers**

Juniors - Greek word puzzle



# What sound do pyrotechnics make?

# Tourmaline Trivia

1.	d (a & c are true)	4. a	7. b	10. b
2.	а	5. c	8. b	11. d (a & b are true)
3.	С	6. d	9. a	12. d

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# Sister club in Australia

Our sister club in Australia is the Atherton-Tableland Mineral & Lapidary Club in Tolga, Queensland. Connect to them on Facebook:

www.facebook.com/groups/197340266987276

One hundred million years ago the eastern edge of the Australian continent extended much farther to the east. Tectonic forces broke off and submerged into the ocean the eastern section while a rising mantle caused the remaining land to lift.

Beginning 4 million years ago large basalt flows filled river valleys and formed a relatively flat landscape. Following that period the volcanoes became more gaseous spewing lava in violent eruptions. This landscape is now called the Atherton Tablelands. You can learn more on Wikipedia.



# This issue

Maplewood Rock and Gem Club News

Volume 10

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# News to share? A suggestion? A correction?

Please send news ideas and images you'd like to share to the newsletter editor, Nancy Samuels at <u>mrgc@nancysamuels.com</u>.