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### **Message from the President**

Welcome to the last month of 2022. Winter is upon us, but there is still time to get out and chase rocks. I recently visited the Cashin mine to search for elusive native silver and covellite, and of course, my son Jon found the best pieces. But the canyon was quiet, the shadows were long, and the cliffs seemed to have a life of their own. Below is a photograph I took on our visit.

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### **Message from the outgoing Director**

Due to David's short message, I am offering one of my own. I would like to thank the Club as a whole and all the awesome individuals I had the privilege to meet and work with this past year. I truly enjoyed my time working for the Club, promoting it in our community and hopefully making it more visible and known regionally.

I would like to challenge all of you to continue with this outreach individually and collectively. Let your friends and neighbors know about classes, field trips and talks. If you know teachers, city staff, business owners, artists, talk to them about what this club offers. Need an elevator speech?

This Club offers a way to learn about the earth around us and artistic methods

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to work with earth resources. Members have access to a wide variety of studio tools for a low annual fee and modest shop use fee. The community of novice and professional artists and rock lovers share excitement and knowledge in a friendly and supportive atmosphere.

Tell your story: why did you join, why do you teach/take classes, what have you learned?

Your own passion is what will excite and inspire new members!

Thanks for sharing your passion with me this past year - and yes, I'll still be involved and help out on a volunteer basis, just like all of you!

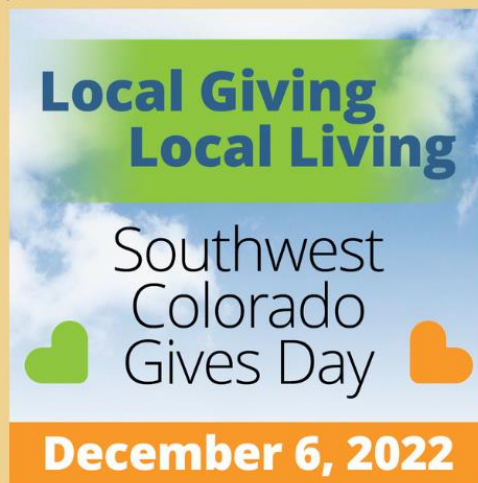
Melanie

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**REMINDER** . . .



Some of you may already be familiar with [ColoradoGives.org](https://ColoradoGives.org), a "one-stop site for Colorado non-profits!" We have registered the Four Corners Gem and Mineral Club with this well-known group to help us grow!

[Check out our profile](#) and share it with others - any donations made [through this site](#) **between now and December 6th** are eligible for \$1.6 million Colorado Gives Day Incentive Fund! All participating Colorado Gives Day nonprofits earn a percentage of the fund, so **the more we raise, the more we get!**

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As always, your contribution is 100% tax deductible and 200% appreciated :)

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Time for our Holiday Party, gift exchange (nice or naughty...), potluck and general time to be fun and silly and just hang out without the saws running (but maybe the tumbler . . . )!

**When: Monday December 5th, 6-8pm**

**Where: The Clubhouse, of course!**

**What: Potluck and gift exchange - NO  
MEETING!**

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Have you seen our members sporting these NEW club shirts with our NEW logo on them? Small, Medium and Large (these run true to size, folks, and don't shrink!) shirts will next be available for purchase at our Annual Holiday Party on December 5th.

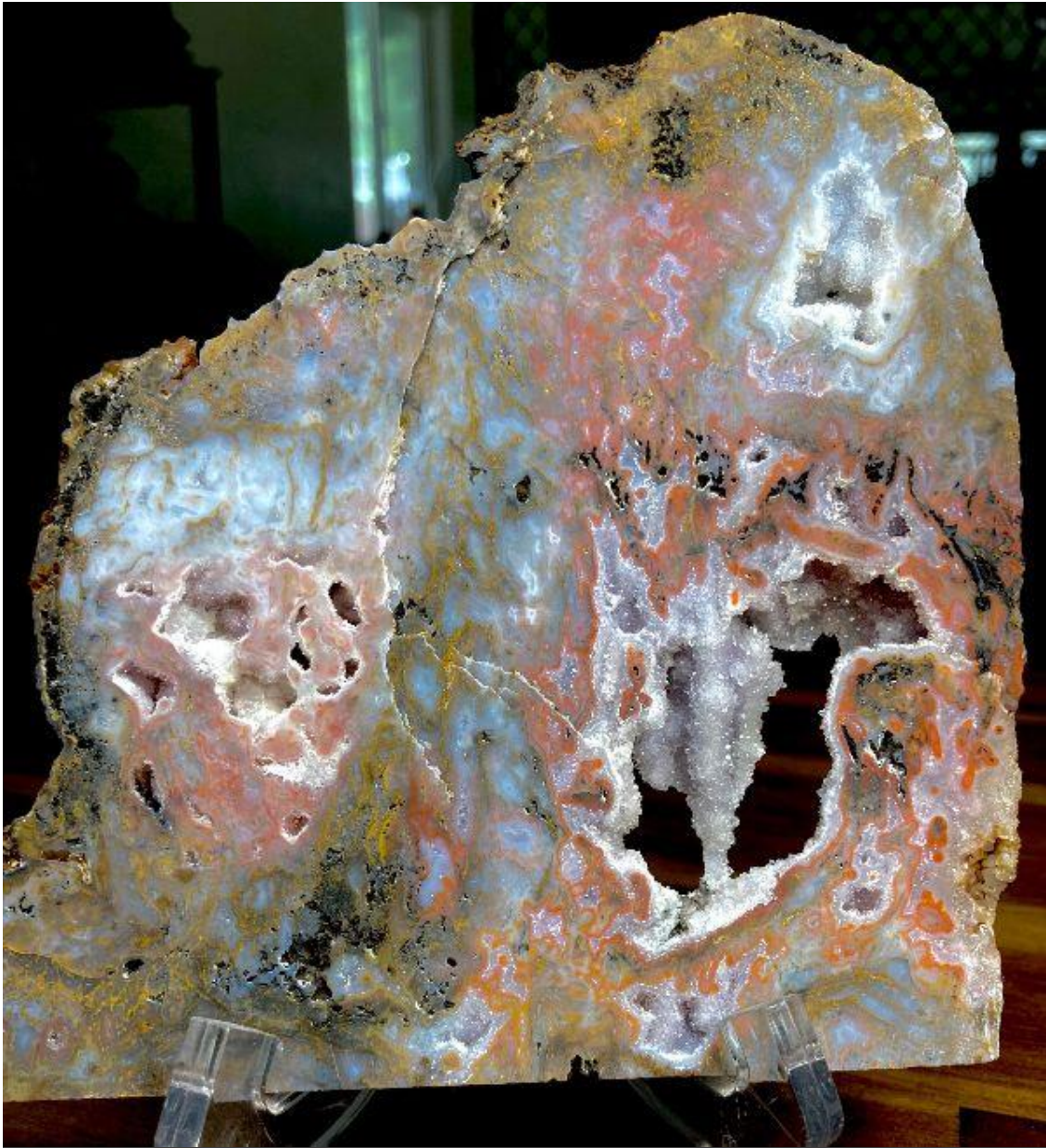
**\$10 each!**

**(price goes up to \$15 at the 2023 Gem Show)**

Come to our party and pick one (or more than one) up!

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## 2023 Gem and Mineral Show!

Next year will be our 69th Show - we need a theme.... "Rocks are sexy," Cindy wonders? If you can contribute to the process (we mean the show), please contact Cindy at [cindypugsley@sbcglobal.net](mailto:cindypugsley@sbcglobal.net). Also, we are accepting donations for the Silent Auction.



### Open Shop Hours

Tuesday 1-4 pm

Tuesday 6:30-9 pm

Wednesday 9am-noon

Wednesday 1-4 pm

Thursday 1-4 pm

Thursday 6:30-9 pm

First & Third Saturdays 10am-2pm

### Open Shop Punch Card

If you like using open shop, remember we have a punch card for multiple use. [Prepurchase](#) 10 visits for \$45 - a \$5 savings - and don't worry about having your "shop fee" when you come in!

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### Upcoming Classes in December:

We have a number of classes offered in December. If you want more information about the course or want to enroll in the classes, please go to our [Club Calendar](#).

December 4, Fold Form and Simple Solder Earrings, Jama Crawford instructor.

December 9-10, Introduction to Lost Wax Casting, Jaymus Perry instructor.

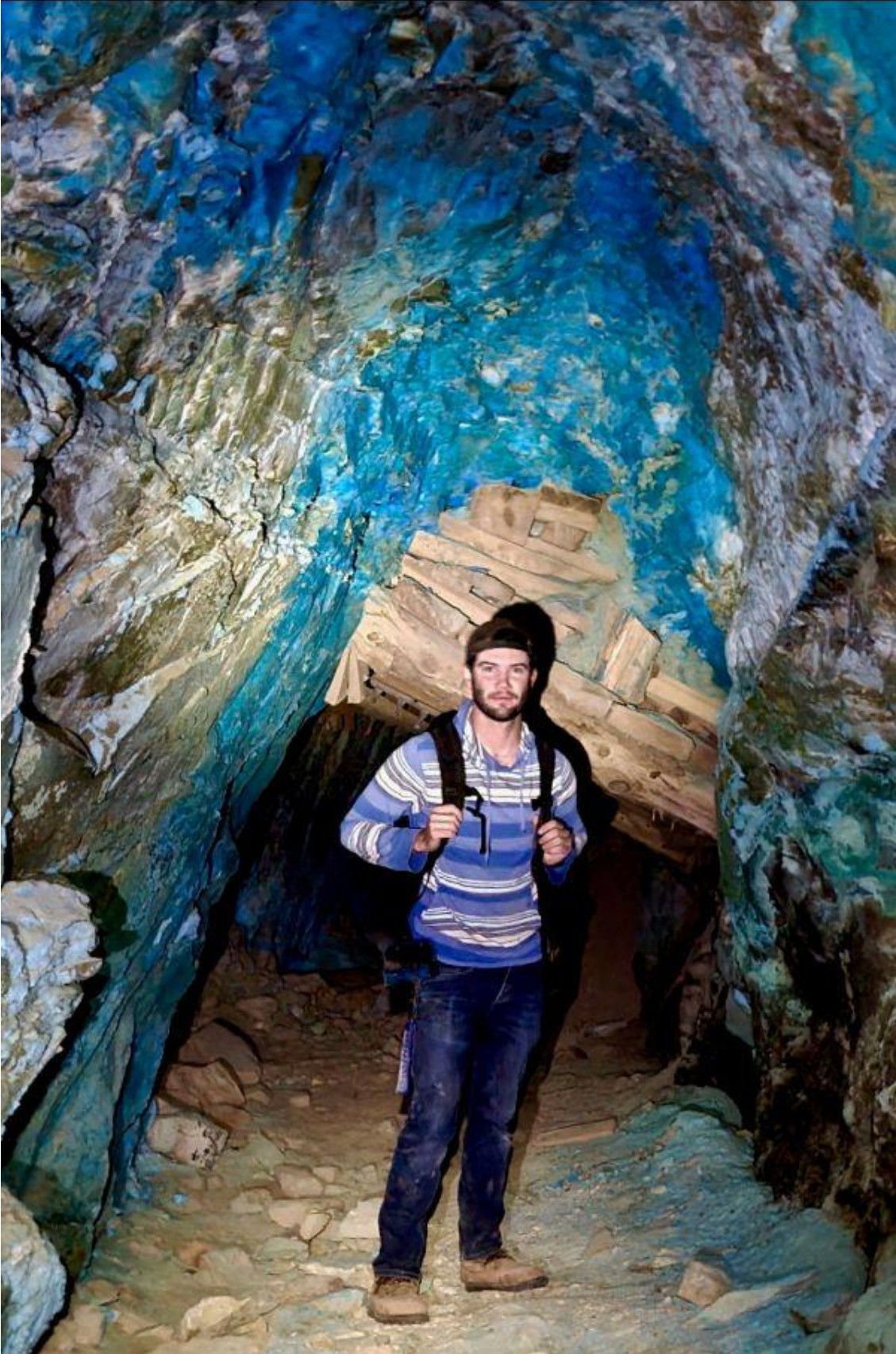
December 11, Cutting and Polishing Cabochons, Joel Arnold instructor.

If you want to know more, visit the Club's calendar at

[www.durangorocks.org/events.html](http://www.durangorocks.org/events.html).

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## Four Corners Focus

Whoa! WHERE is this?? If you want to know, you'll have to read club member and recent FLC grad, Matt Wanda's write up on the [Four Corners Focus page of our website!](#)

### **Rock On: A "Hot" Geologic Comic Character**

As a geologist, rocks are my world. I am particularly fond of igneous rocks because they are born of melted rock in the earth and have a profound impact on our planet. And, they often contain interesting minerals. My oldest son Nick has long enjoyed the stories and characters of Marvel comics. He is the person who introduced me to the character known as Magma. I was intrigued by the character and her powers, especially since only a few comic characters have geologic powers. Magma, whose alter ego is Amara Juliana Olivians Aquilla was introduced to the comic world in October 1983 in The New Mutants #8. Of course, with any comic character she has a history theme in the Marvel stories which I am not going to address.

My interest is in the powers that Magma possesses. Magma's costume consists of unstable molecules that protect her from the tremendous heat she generates. Magma has the power to generate and control molten rock or magma, creating mini volcanoes and telekinetically form projectiles of magma. Magma can also create flames and blasts of heat. Imagine if Magma was soldering metals to make jewelry, how cool.

Comic lore notes that Magma also has the power of "geokinesis" where she uses psychic powers to influence the movement of tectonic plates in the Earth's crust to generate earthquakes within an area of a few city blocks. Apparently, the character is also an expert swordswoman and can heal when touched by a hot substance. When using her powers, Magma's body shines with intense light and gives off tremendous heat. Her hair seems ablaze with fiery light, and neither her own heat nor heat from any other known source can harm her while in this form.

Magma's powers depend on her maintaining contact with the surface of the Earth and are linked to her emotions. When she is angry, she can temporarily lose control of her powers and unintentionally create major earthquakes and large-scale volcanic activity. Obviously, this is one character you want to keep happy, possibly with a hot toddy.

Sources of information:

[Amara Aquilla \(Earth-616\) | Marvel Database | Fandom](#)

[https://marvel.fandom.com/wiki/Amara\\_Aquilla\\_\(Earth-616\)](https://marvel.fandom.com/wiki/Amara_Aquilla_(Earth-616))

[Magma \(comics\) - Wikipedia](#)

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An image of the comic character known as Magma. Image is posted at [Amara Aquilla \(Earth-616\) | Marvel Database | Fandom](#)

**December Birthstone (Sagittarius, November 22 to December 21,  
Capricorn, December 22 to January 19)**

The December birthstones are tanzanite, turquoise, and zircon which I highlighted in the December 2021 FCGMC Newsletter. So, for my final essay on birthstones I am going to focus on zircon. I realize that many jewelers are enamored with turquoise, but for a geologist the mineral zircon has changed our understanding of Earth events.

GIA reports that the name zircon was possibly derived from the Arabic “zarkun”, meaning “cinnabar” or “vermilion.” Or the Persian word “*azargun*”, meaning “gold colored.” Whatever the source of the name, it is a great one. I have always thought this word would be a great name for a comic character. Zircon comes in a rainbow of colors with red and reddish brown being common. Colorless zircon is notable for its brilliance and flashes of multicolored light, called fire, which have caused it to be confused for diamond. Though zircon makes a beautiful gemstone, wearer beware, as this mineral contains a minor concentration of uranium that releases radioactive particles. Zircon ( $ZrSiO_4$ ) occurs in many igneous rocks and some metamorphic rocks as small crystals or grains, rarely more than 1% of the total mass of the rock. In some granite pegmatites, large zircon crystals can form. It is also found as alluvial grains in some sedimentary rocks due to its high hardness.

Below: Red zircon crystal from Pakistan. This is a good example of a tetragonal prism capped by a pyramid. Photograph from <https://www.mindat.org/photo-66100.html>.



What other attributes make zircon attractive? Beside the spectrum of colors it displays, it has a hardness of 7.5, high brilliance and luster, pronounced double refraction, inert to temperatures up to 1000° C, and has beautiful tetragonal forms. The tetragonal crystal system is represented by common geometric shapes in our world. For instance, a stick of butter is tetragonal because it has a square cross section and a square prism. In the world of crystals, the common crystal forms are tetragonal dipyramids and tetragonal prisms capped by pyramids.

Above: A cluster of brown zircon crystals illustrating the forms of tetragonal prisms with pyramids. Photograph from [geology.com](http://geology.com).

Zircon has other uses besides a gemstone. It can constrain the timing of geologic events using U-Pb age geochronology. Zircon is an abrasive, and the primary ore of zirconium metal used in metal products that require a resistance to heat and corrosion. This metal is used to make high-performance alloys, specialty steel, lamp filaments, explosive primers, computer equipment and many electronics components. Zirconium dioxide (zirconia) is produced by heating zircon sand to high temperatures. In powdered form, zirconium dioxide is bright white, highly reflective and thermally stable. It is used as an opacifier, whitening agent, and pigment in glazes and stains used on ceramics and pottery. Yttria-stabilized zirconia is used to make cubic zirconia, fiber optic components, refractory coatings, ceramics, dentures and other dental products (geology.com).



Brilliant cut orange zircon from Cambodia. Photograph from <https://www.minerals.net>.



Some of the colors of zircon. Photograph from [What Is Zircon Gemstone | Zircon Stone – GIA](#)



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