October Newsletter

10/2020 Volume 2020, Number 10

In This Issue

Meeting at Miller Center
301 Grove Street
Lynchburg, VA 24501
3rd Wed of the month
7:00 pm until 9:00 pm

Wintery weather meetings schedule is if the Lynchburg schools are down for weather then the meeting is cancelled

Workshop is the 2nd Saturday of the month.

Meetings are cancelled until further notice.

President's Meanderings:

By James Tomlin

Hello Everyone, I have been keeping quite busy here lately with finding out some information on when we might be able to hold physical meetings again and having a show for our club. Both are still depending on how things may progress or subside as we all know. I know we all miss each other's faces and camaraderie and I am doing my best to try and bring this back. Please be patient with me as I fight for our club.

I have spoken with the head of the Parks and Rec Department and he says that it is still not feasible to hold meetings in our previous spot until regulations let up a bit. However, I asked about the possibility of using the Aviary building and it was stated that it is undergoing some minor construction currently, but that it is a possibility. He said he would let me know something as soon as it is complete and he is very confident that we can make that work. This may not be a perfect solution but it is hope, if not a temporary solution for us as a start.

We are still on for the show that is being held next month in Salem, hosted by the Roanoke Club. We are in desperate need for volunteers to help out in any capacity you are willing to give. Some areas in need but not limited to are setting up, breaking down of club assets, running the sluice line, pickers wheel and vendor table. If you are wanting to help out please visit the clubs Facebook group here https://www.facebook.com/groups/432839874271992/?ref=share or email one of the officers to find out more information. I cannot stress how much our club needs volunteers, as it is run by volunteering and is vital in its continuation.

Your Fellow Rockhound,
James Tomlin

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Youth Out Reach
Jennifer Staton

GMSL CLUB EQUIPMENT AUCTION

We are still working on the auction and as soon as we feel safe in gathering the equipment pictures and the equipment we will make this happen.

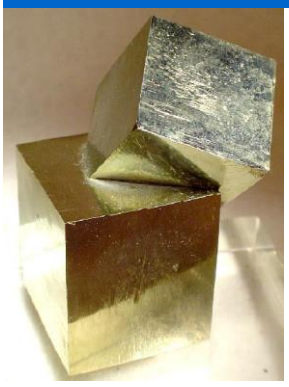
Newsletter Editor pick
In the coming months I will give out the ways to identify your rock specimen. Information & pictures from Mindat.org.

Luster Test

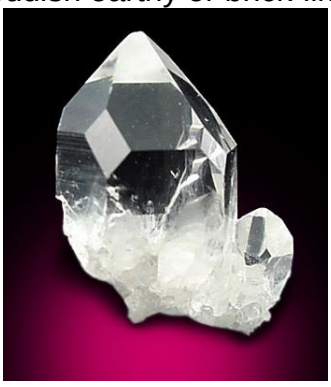
Lustre is the character, or quality, of reflected light. It is one of the properties by which we recognize minerals and differentiate one from another. Mineralogists and collectors generally divide lustre into two categories, metallic and nonmetallic. That is not very many and would not be too helpful with more than 5000 known minerals; but the nonmetallic division is further subdivided. Its divisions include: adamantine, vitreous, pearly, resinous, waxy, greasy, oily silky, dull, and earthy. This article is intended to help the neophyte collector distinguish between them. Lustre is largley independent of color.

There is no clear point of separation between, say, adamantine and vitreous. Lustre is a continuum from metallic to earthy. Further, it is not uncommon to see the prefix "sub" attached to any of them or to see two together as "vitreous to adamantine". The best you can do is to keep in mind the general description of the lustre and mentally compare it to some object that you know. For example, if the lustre is said to be metallic and it is yellow, does it look like polished brass. If the lustre is waxy, does it look like the wax in a candle?

As you look through the Mindat Mineral Pages, or a handbook, you will notice that many minerals can exhibit more than one lustre. Luster is affected by the quality of the crystal face. Usually, the smoother the face, the higher the lustre. Further differences in the mineral itself result in different lustres. For example, hematite can be bright slivery-gray metallic crystals, dull gray submetallic and massive, or reddish earthy or brick-like masses.


Pyrite: Metallic Lustre


Diamond: Adamantine Lustre


Quartz: Vitreous Lustre


Gypsum (var. Satin Spar): Silky Lustre

You cannot learn to recognize different mineral lustres by studying photographs. In general, it does not work because the camera does not capture the quality of the light. For example, the photo of the diamond at the top of this page does not begin to show the adamantine lustre. You need to look at real minerals and their crystals in natural light. Compare what you see to what mindat, or your mineral handbook, tells you the lustre to be.

Metallic Lustre

Does your specimen look like, or reflect light like a piece of polished brass, or a silver spoon, or a piece of cast iron, or . . . You get the idea. Compare to a real metal object. The door of your automobile does not count; it is paint. If the lustre isn't quite as bright as the actual polished metal, then call it "submetallic". Approximately 15% of minerals can have a metallic lustre. Native elements, sulfides,sulfosalts, and oxides are well represented. Among the more common minerals with a metallic lustre
are: Arsenopyrite, Bornite, Cassiterite, Chalcopyrite, Chalcostibite, Chromite, Galena, Goethite, He matite, Magnetite, Marcasite, Pyrite. Pyrrhotite, and Rutile.
Electrons in atoms, ions, and molecules are located in orbitals. An orbital is a space around the nucleus of an atom that has a shape (some are directional, some are spherical) where there is a high probability of finding an electron. Different orbitals have different energies. The highest energy and outermost (valence) electrons of the transition metals are named the "d orbitals".

Adamantine Lustre

Adamantine is bright, brilliant, almost like a highly polished metal, but it isn't metallic. Polished diamonds exhibit it. They are almost the definition of adamantine. Minerals containing very heavy ions, like silver, mercury, and uranium, are likely to have an adamentine lustre. A little less than 10% of minerals exhibit adamantine lustre. Some minerals with adamantine lustre
are: Anatase, Anglesite, Brookite, Cerussite, Cinnabar, Jahnsite, Miargyrite, Proustite, Pyrargyrite and Sphalerite.

Vitreous Lustre

A vireous lustre is the lustre of freshly broken glass. It is bright with a high shine, but not as brilliant as the reflections from minerals with an adamantine lustre. About 70% of all minerals show a vitreous lustre. A large proportion are silicates, carbonates, phosphates, and other oxy-salts. Quartz, one of the most common minerals, has a vitreous lustre. Others
include: Azurite, Beryl, Crandallite, Fluorapatite, Lazulite, Smithsonite, Uranophane, wavelite, and Wolfenite.

Pearly Lustre

A pearly lustre has the quality of light like that reflected from (you got it) pearls or mother-of-pearl. It is slightly hazy, diffuse, out of focus. A pearly lustre is most often assigned to a mineral which has parallel planes of cleavage, like calcite or muscovite, where there is reflection from closely spaced stacked planes. The pearly lustre shows only on the smooth crystal face parallel to a cleavage plane. Very often, pearly is paired with another luster, usually vitreous, in the mineral descriptions. That is due to the direction of the cleavage planes. A crystal face parallel to the

cleavage direction will show the pearly luster, but a face not parallel may be vitreous. Among the minerals that commonly show a pearly luatre are: Calcite, Brucite, the feldspars, the micas, and Hemimorphite.

Silky Lustre

A mineral with a silky lustre reflects light like a piece of fine silk cloth. Earlier it was stated that one cannot learn to recognize kinds of lustre from a photograph. Perhaps the photo of satin spar at the top of this article is an exception. It definitely displays a silky lustre. The silky appearance is due to long fine crystals laid down in parallel. Minerals that can exhibit a silky lustre include: Anthophyllite, Aurichalcite, Chrysotile, Epsomite, Gypsum (var. Satin Spar), Malachite, Pectolite, Mesolite, Tremolite, and Ulexite.

Resinous Lustre

A resinous lustre reflects light like a piece of amber, rosin, or a piece of plastic. Minerals with a high bright luster and a brown, yellow or red color often appear to be resinous. Minerals that can display a resinous lustre include: Almandine, Epidote, Grossular, Pyromorphite, Realgar, Sphalerite, Sulfur, and Tryphlite.

Greasy, Oily, & Waxy Lustres

Greasy, oily and waxy are self-explanatory. Minerals with a greasy luster, in addition to looking like a lump of grease, often have a greasy feel to them as well.
Minerals that can have a greasy or oily lustre include: Amblygonite, Chamosite, Cookite, Datolite, Diamond, Dioptase, Foitite, Lizardite, Mottramite, Natrolite, Polucite, Wulfenite, and Zircon.
Minerals that may have a waxy lustre include: Brucite, Chrysocolla, Glauberite, Opal, Talc, and Turquoise.

Dull & Earthy Lustres

A dull or earthy lustre needs no explanation. It depends in large measure on the particle size or the friability of the mineral. However, a surprisingly large number of minerals that generally have higher lustres may also exhibit a dull or earthy lustre. For example azurite most often occurs as adamantine crystals, but it is also found as an earthy blue powder. Minerals that are typically dull or earthy are the clay minerals, such as Kaolinite and Montmorillonite.

A Little Theory

When light strikes the surface of an object, it may be absorbed, transmitted, and/or reflected. Usually all three occur, with absorption predominating in opaque minerals, and transmission accounting for most of the light in clear, colorless minerals. It is the reflected light that accounts for lustre. Even in opaque minerals, the light penetrates a few atomic layers deep. It interacts with the electrons in the near-surface atoms and some of it is radiated back through the surface. The nature of the material and the angle at which the incident light penetrates affect the reflectivity.

Metallic minerals, where ions are immersed in a sea of essentially free electrons, strongly absorb the visible light. The refractive index is generally above 3. If the lustre is submetallic, the minerals are usually semi-opaque to opaque and the refractive index is about 2.6 to 3. An adamantine lustre usually is associated with a refractive index between 1.9 and 2.6 (if the color is yellow or brown, the lustre is resinous). And minerals with a refractive index between approximately 1.3 and 1.9 display a vitreous lustre. Greasy, oily, waxy, dull,and earthy are variations depending mostly on surface conditions and particle size. There are no absolute division points in refractive index between minerals with different lustres. Rather they are fuzzy, overlapping bands in a continuum.

In minerals, as with other objects, the proportion of light that is reflected and its character is greatly affected by the nature, or condition, of the surface. The more irregular the surface, the more diffuse is the reflected light. Thus a mineral that may have a vitreous luster when a crystal face is flat and very smooth, may display a waxy luster if the surface is mildly irregular.

Program for the coming months

We are working on the Zoom meetings trying to see what it will take to get the time limit increased and learning how to use the other features to enhance the program. We will let everyone know if we have a speaker. We will send the sign in information out on Tuesday of the week of the meeting. This month it is 10/21/2020 starting at 7:00 pm.

Will update to the three month ahead once we get a good handle on things.

Note from the Editor

Hi All,
Well, it has been different for me this fall as I have semi-retired and that has open up doors all over the place. My wife for one, as we have now replaced carpet, painted and put in new laminate flooring in two bedrooms. That is after I redone my deck (which is 10’ x 40’ and 9’ off the ground. Work also has realized that I am now not working like I was and that has caused some to wonder what next. Church has also jumped in and ask that I return to Deacon along with my duties as audio chairman and operator. So retirement does not always mean less work just redistributed work and if lucky something that you like more. In-between all of that I have managed to get some faceting in along with setting up my blacksmithing shop with more metal scrap.
I also attended an EFMLS editors Zoom meeting that had over 16 editors in attendance. We discussed the newsletter and what each club was doing for newsletters and most of us are in the same boat. We all look hard for things to put in a newsletter and get very little from the membership. I am lucky as not only do I get the president’s meanderings I also get an article from Dave Woolley. But the newsletter needs to be more of what the membership wants, so please send in your suggestions for the newsletter so I can make it more about you the members.

I plan to make some changes in the newsletter in the coming months. If you have some ideas let me know. I plan to make it longer for those that get it by e-mail and have added pages but with the cost of mailing we need to keep the page count down for the mailed version.

Remember to send me your “Why I became a Rockhound” short story.
My email is stevegordon@comcast.net

Why I (we) became a Rock-hound

By Zachary McKinney

Need a story.

Field Trips

None at this time

I got this from another club's newsletter and thought that I would just post the link and not the whole article. Just copy and paste the link below and if that does not work, I can email the whole article just let me know and I will send it to you.

Mineral Cleaning for Amateurs

John's website is full of information that all mineral collectors will find useful and interesting.

http://www.johnbetts-fineminerals.com/

September Executive Meeting Minutes

There was not an Executive meeting

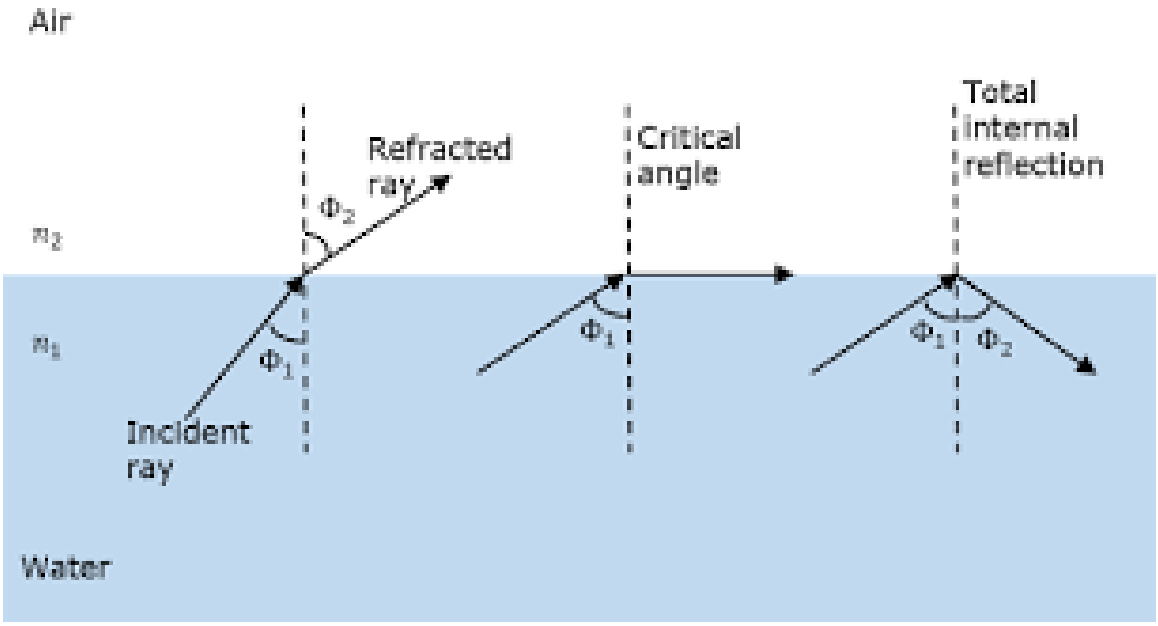
What do you do with dead geologists?

You barium.

Article for this month: You too can be a part of Faceting History

by Dave Woolley

Optic Science



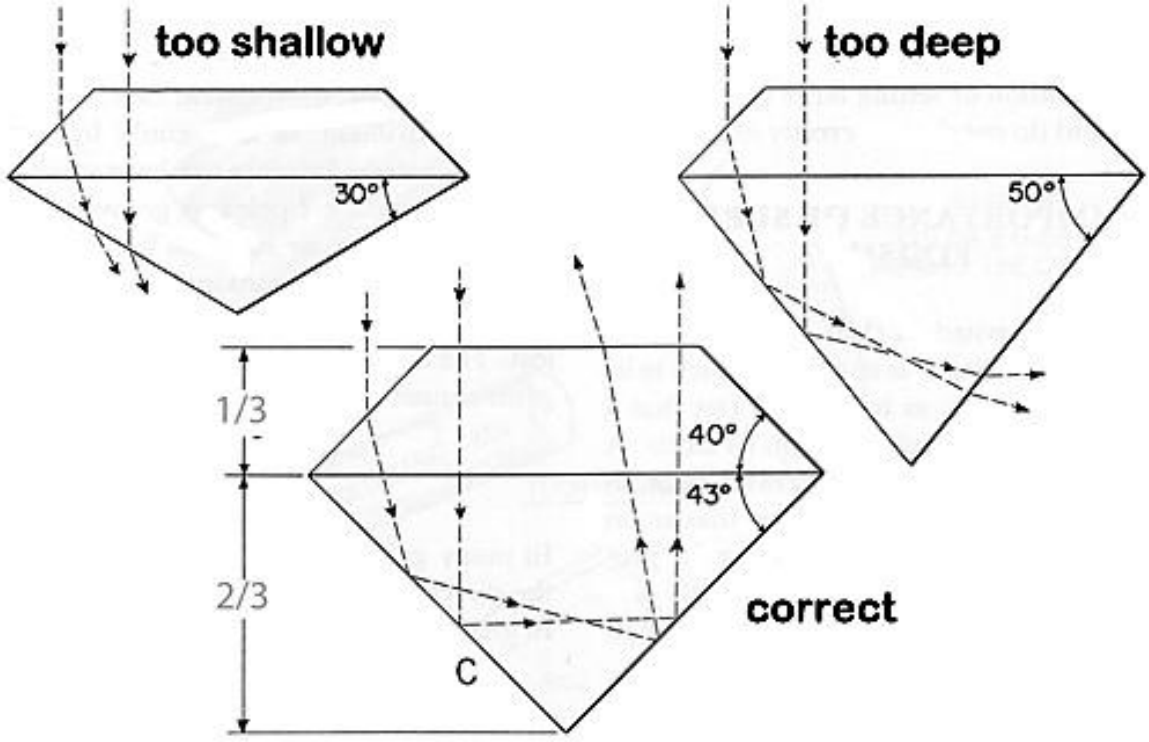
64. This sketch shows how light act inside a gem as light approaches a facet, (or as in this illustration, water).

If the *internal* angle is steep – closer to 90 degrees, most of the white light is **Refracted** and may be bent into a rainbow of colors as it passes into the air. Each color frequency refracts a slightly different amount depending on the Refractive Index of the gem, separating the colors from each other.
Refraction also occurs when light *enters* a gem at a steep angle from the air.
If the angle is shallow, either side of the facet, most of the light is **Reflected**.
At the **Critical Angle**, light follows along the edge of a facet and is lost.

Pavilion Main Facet angles are set greater than the Critical Angle to prevent light loss.
Not shown, vertical light goes straight through, either direction.
Dispersion is a measure of the different amounts of refraction that may occur between the red and blue ends of the rainbow spectrum for a particular gem species.
If a gem has a native color, that color will tend to "filter out" the other colors of the rainbow.

The Critical Angle is what is *viewed* in a **Gem Refractometer**. The scale reads in pre-calculated **Refractive Index** numbers for Gem Identification.

Faceting Science



65. This sketch shows how a common gem cutting flaw can be eliminated: a dull, **"Fish Eye"** or **"Windowed Gem"** where the center of a gem remains dark with no sparkle due to light loss. For any particular gem variety, there is a *small range* of Pavilion Main angles, what I call the **"Pavilion Angles Critical for Faceting"**, that work well for returning light, a play of colors, and creating sparkle**.** 43 Degrees is often used for Quartz and Beryl. Gem specific Designs are made with different Pavilion Main Angles for other gems with higher or lower Refractive Indices. The higher the Refractive Index, the more the Pavilion Main Facet angles may be increase above the Critical Angle; this allows more of the refracted colors to be reflected back from the Pavilion thorough the Crown facets for those high Refractive Index gems such as Sapphire.
The "Pavilion Main Angles Critical for Faceting" is not the above described "Critical Angle" of Optical Science.
Crown Facet Angles are less important and can deviate from a "recipe" with less effect. Crown Angles affect the overhead *light entry angles* and *viewing angles* of a gem.

Other Links that you may want to check out:

A Guide to Ethical and Conflict-Free Jewelry
https://ethicaljewellery.org/introduction.

Insurance Institute of Jewelry Appraisal
https://instituteofappraisal.com/Investigation_of_Artificial_Color_Infusion_of_Gemstones.pdf
https://instituteofappraisal.com/Exposing_the_GIA_Juggernaut.pdf

Rock collecting guide for geology beginners
https://www.basementguides.com/rock-collecting-and-geology-basics/

Facebook Link for the club
https://www.facebook.com/groups/432839874271992/?ref=share

If you need to renew your club membership you can let me or Debbie Wade know and we can email you the form. You can make checks out to GMSL.
Our Mailing address is:

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