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No Fooling, It's Iron Pyrite

Cheryl Ogletree, Pleasant Oaks Gem and Mineral Club of Dallas

Eureka! I've found my gold mine. It's not that bright yellow mineral that humans have been searching for through the ages. It is that "other gold"; the gold that prospectors threw aside when they were fooled by its brassy sheen and thought they had found real gold. They labeled this mineral fool's gold and worthless. That mineral is iron pyrite.

Iron pyrite (FeS_2) is a compound of iron and sulfur. Pyrite crystals can form cubes and octahedrons. Sometimes a combination of both crystals can occur. In crystallization, cubes can form twinning, a union of two or more crystals. The faces of the crystal are smooth, crossed by fine, sometimes parallel straight lines. There is not good cleavage.

Pyrite occurs in a variety of environments. It can be found in igneous rock, in metamorphic formations and in sediments. In sedimentary rock, pyrite replaces fossils, seeming by the reaction of the sulfur in the dead animal or plant to the iron in the rock surrounding them. In black shale, nodules are formed under stagnant, anaerobic conditions. In slate, well-shaped crystal cubes can be found. It is, also, a common mineral in hydrothermal sulfide veins.

Pyrite used to be an important ore for the production of sulfur. Today, sulfur is obtained as a by-product through the processing of crude oil and natural gas. The most important use of pyrite is as an ore for gold production.

With pyrite so abundant, worldwide, it's a shame that finding a more economical and beneficial use for pyrite hasn't reached fruition. Maybe, in the near future, through research, we will find a solution to help mankind, through the use of iron pyrite.

Researchers at Berkeley National Laboratory have invented a method of producing pyrite nano-

crystals from a solution heated under pressure for use in solar cells. There are advantages for using iron pyrite: (1) there is an abundant nontoxic material supply, (2) it has good absorption qualities, and (3) it has a lower cost than silicon.

Iron pyrite is a promising benign semiconductor material that shows promise for a



strong and broad absorber for photovoltaic and high energy density cathode material for batteries. However, controlling size, shape, formation, composition, etc. is still being worked out.

Continued on page 2

No Fooling, It's Iron Pyrite (continued)

Pyrite and marcasite are often confused because they are similar in characteristics. Marcasite is a polymorph of pyrite. That means that marcasite has the same chemistry as pyrite (FeS₂) but is a different structure and crystal shape. The marcasite / pyrite pair is notable next to the diamond / graphite pair. To make it more confusing between pyrite and marcasite, marcasite – the mineral name – is also used as a jewelry trade name. So, when one sees marcasite stones all polished, faceted and inlaid in silver, one is still looking at pyrite. And speaking of jewelry and gems, they often use pyritized fossils in jewelry settings. Pyrite can be cut as domes or faceted cabochons and beads. Did you know pyrite is the “veins” in lapis lazuli, a vivid blue stone?

Last week I was watching a program about a small Scottish island that had a slate quarry. The cottages were made of stones from that quarry. The villages prided their selves in living in sparkling cottages. You ask, “What makes them sparkle?” You’re right; it was the pyrite in the slate that sparkled. I guess that I wouldn’t mind living in a “gem” of a house, but I’m happy to live in my house with my favorite fool’s gold specimens that I’ve collected and that I will attempt to collect again in the future.

References:

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- Processing Iron Pyrite Nanocrystals for Use in Solar Cells, <https://ipo.lbl.gov/?s=pyrite>.
- Minerals.net, <http://www.minerals.net/mineral/pyrite.aspx/>
- The Gemstone Pyrite (Marcasite), http://www.minerals.net/gemstone/pyrite_gemstone.aspx
- The Mineral Pyrite, <http://www.galleries.com/Pyrite>
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Shows and Activities – Upcoming Show and Activity Dates

Nov 4 – 5, Odessa, TX, Midland G&MS show, Ector Co. Coliseum, www.midlandgemandmineral.org/home/

Nov 4 – 5, Amarillo, TX, Golden Spread G&MS show, Amarillo Civic Center,

www.goldenspreadgemandmineralsociety.weebly.com/

Nov 4 – 5, Austin, TX, Paleo Society of Austin show, Old Settlers Heritage Assoc. www.austinpaleo.org/index.html

Nov 10 – 12, Humble, TX, Houston G&MS and SCFMS Convention, Humble Civic Center, www.hgms.org

Nov 18 – 19, Mesquite, TX, Dallas G&MS, Rodeo Center Exhibit Hall, www.dallasgemandmineral.org, case53d@yahoo.com

Nov 18, Field Trip to North Sulphur River

Dec 7 – 9, Irving TX, Rock Sale, David Dobson, The Hyatt Place, 5455 Green Park Drive, rock@rocktrading.com

Dec 9 – 10, Leesville, LA, DeRidder G&MS show, West LA Forestry Fairground

Jan 20 -21, Fredericksburg, TX, Fredericksburg Rockhounds, Pioneer Pavilion, Lady Bird Johnson Park, www.fredericksburgrockhounds.org/

Jan 26 – 27, Tyler, TX, East Texas G&MS show, Tyler Rose Garden Center, www.etgms.com/

Don't Forget:

Quartzite – Jan 1 through Feb 28 – numerous shows

Tucson – Jan 19 through Feb 12. Tucson G&MS (main show) is Feb 8 - 11

Ref:

- September - October 2017 SCFMS Newsletter
- Rock & Gem Show Calendar, <http://www.rockngem.com/show-dates-display/?ShowState=ALL>

Chips and Chatter

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November 2017

Pleasant Oaks Gem and Mineral Club of Dallas, TX

Visit us: www.pogmc.org “Like” us on Facebook

Just a Few Words

By Sandy Fuller – the new AFMS President
From the November 2017 AFMS Newsletter

It is a pleasure to serve as your 2017-2018 President. I am looking forward to working with our seven federations on behalf of all our affiliated clubs. So allow me to introduce myself.

As is common among the rockhound crowd, as a child, my pockets often overflowed with geological treasures I found as I explored the world around me. One memory is a backpacking trip where we weighed out before embarking on our three-day journey and the weighed in upon return. Unlike everyone else, my pack was now 3 pounds heavier instead of lighter. I still have the treasures I found on that trip.

Serious rockhounding had to wait, until I moved in Minnesota and discovered local mineral club shows. It wasn't long before a dealer invited me to come to a mineral club meeting. I joined that night and soon got active in the club.

During my first field trip, I marveled that a club member could just walk around for a few minutes and then return to show us specimens that we could find at the site. I had been in the field before, but rarely experienced this kind of success.

A few years later, we were in the lead vehicle on a field trip, checking to make sure the road was passable. After confirming acceptable driving conditions, I briefly wandered around picking up samples to share with the rest of our group. As I shared my finds I recalled that not long ago feeling of awe. I was learning so much from my fellow club members.

Like most folks, I joined a club to learn about minerals and related fields but I stayed because of the people. Over the years, I met people from all walks of life. We are all so different and yet we are bound together by our common interest in geological things. We became a "family" that cares about each other.

As I got more involved in our hobby, I heard about an opportunity to attend a federation meeting and participate in some interesting field trips. My club needed a delegate, so I volunteered. The discussion got interesting, so I added my thoughts to the conversation. After the meeting, someone asked if I would like to get more involved. And as they say, the rest is history.

I have met people from across my region and across the country. We have gotten to know each other, shared ideas and worked together to help our clubs better serve their members and support the work of our regions. Thank you for this opportunity to serve as your national president and work with you to make our local clubs stronger.

Sandy



Editor's Corner – Thanks

Don Shurtz, Pleasant Oaks Gem and Mineral Club of Dallas

I hope you enjoyed the great article about Pyrite by Cheryl. I found it very entertaining and learned how pyrite could possibly be used in future Solar Cells and that some types of pyrite are actually being mined for their gold content. Who would think Fools Gold could actually contain Gold? I want to thank Cheryl for her effort in putting the article together; it is the first article contributed by a club member (other than the editor) this year. It is too bad that the year is almost over – but fear not. If you have an article, puzzle, etc. lurking there in the back of your mind, there are plenty of months in 2018 to help fill out the Chips and Chatter.

Visit an Area Club

[Arlington Gem & Mineral Club](#), 1408 Gibbins, Arlington, TX, 1st Tuesday of each month at 7:30 pm

[Cowtown G. M. & Glass Club](#), meets the 2nd Tuesday at 7:00 pm, Corp. Emp. Rec. Association (CERA) 3300 Bryant Irvin Rd. Fort Worth

[Dallas Bead Society](#), meets 1st Saturday of each month at The Point at CC Young, 4847 W. Lawther Dr., Dallas, TX

[Dallas Gem & Mineral Society](#) meets the 3rd Tuesday of each month at 7 pm, American Legion, 10205 Plano Rd, Dallas (next to their shop)

[Dallas Paleontological Society](#), 2nd Wed. of each month at 7:30 pm, Brookhaven College, Building H, 3939 Valley View Lane, 75244

[Fort Worth Gem & Mineral Club](#), 4th Tuesday of each month at 7:30 pm, 3545 Bryan Avenue, Ft. Worth

[Oak Cliff Gem & Min Soc.](#), 4th Tuesday of each month at 7:30 pm, Unitarian Universalist Church, 3839 W. Keist Blvd, Dallas,

[Pleasant Oaks Gem & Mineral Club](#), meets the 1st Thur. of each month at 7:30 pm, Garland Women's Activities Bldg., 713 Austin, Garland,

Rockhound Soap Box: “National Monuments”

By John Martin, AMFS Legislation and Conservation Committee
From the November 2017 AFMS Newsletter

For the last ten months there have been a lot of discussions on the future of our National Monuments. There has been a lot of miss-information presented by many political and environmental groups mainly to justify their agendas and positions. The Proclamation signed by the President only asks that a Review of the National Monuments, which was created by Presidential Action, be reviewed for compliance with the Antiquities Act of 1906. There was nothing in the Proclamation that authorized any change, reduction or elimination of any standing National Monuments under review. The review has been completed and the report has been released by the Department of the Interior (DOI). The preliminary DOI report has been sent to the President for consideration on the 29 National Monuments under review. A final DOI report has been sent to the President with recommendations for consideration. The report is yet to be released to the public; however there has been a copy of the report leaked from the DOI.

The leaked DOI Final Report recommends some changes to 10 of the 29 National Monuments. These monuments are: Bears Ears National Monument, Utah; Cascade-Siskiyou National Monument, Oregon; Gold Butte National Monument, Nevada; Grand Staircase-Escalade, Utah; Katahdin Nation Monument, Maine; Northeast Canyons and Seamounts Marine National Monuments, Massachusetts; Organ Mountains-Desert Peaks National Monument, New Mexico; Pacific Remote Islands Marine National Monument; Rio Grande Del Norte National Monument, New Mexico; Rose Atoll Marine National Monument, American Samoa.

The leaked DOI Final Report recommended changes be made to these National Monuments, but did not provide or define the changes. It did recommend that the changes be made in accordance with established laws and regulations and should include public input. Will the President accept the recommendations in the leaked DOI Final Report? It remains to be seen.

Will this review have an effect on Recreational Rockhounding? If there are changes made to the National Monuments it will be up to concerned Rockhounds to make sure that the voice of the Rockhounds is heard and Recreational Collecting is included in the changes to the affected National Monuments where applicable.

A few words on the American Antiquities Act of 1906 as amended and its usage to create National Monuments without the consent of Congress or input from the Public.

The act stipulates that *“The President may, in the President's discretion, declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated on land owned or controlled by the Federal Government to be national monuments”* and *“The President may reserve parcels of land as a part of the national monuments. The limits of the parcels shall be confined to the smallest area compatible with the proper care and management of the objects to be protected”*. (<https://www.gpo.gov/fdsys/pkg/USCODE-2015-title54/html/USCODE-2015-title54-subtitleIII-divsnC-chap3203-sec320301.htm>) On these statements most Americans can agree and in most cases when used with common sense and best management practices are acceptable for preserving and protecting the as stated, historic and prehistoric structures, and other objects of historic or scientific interest on public lands. However, when the laws are manipulated for political purposes or for special interest groups, the people, Congress and the President have the right to question these actions, which is the case with the current National Monument Review. Were these 29 National Monuments under review, created adhering to the actual requirements of the American Antiquities Act of 1906 as amended or for political purposes?

Only time will tell. .

President's Message

Ling Shurtz, POGMC President

IGEM Show is over – for a couple of months anyway. At our next meeting we will install the new officers. We also need to discuss participation in the Dallas Regional Science and Engineering Fair and the STEM Fair at Brookhaven – both are scheduled for Feb 24, 2018. For our presentation, we will complete the EMU jewelry box project – be sure to bring yours to the meeting, even if you completed it at home.

Club Officers for 2018

President: Ling Shurtz
1st VP, Programs: Carolyn Grady
2nd VP, Field Trips: David Dobson
Secretary: Lee Elms
Treasurer: Del Grady
Editor: Don Shurtz
E-mail: don.shurtz@gmail.com,
L.SHURTZ@gmail.com

Minutes of the October 5th 2017 Meeting

Ling called the meeting to order at 7:30pm.

The Pledge to the flag was led Don.

Sunshine Report: Nothing to report (Yeah!)

Visitors: Past club member Roberta Crippen visited us this evening. She is trying to sell all of her rock cutting and polishing equipment.

Minutes: We discussed the Minutes of the September meeting as printed in the November 2017 Chips and Chatter. A motion was made by Carolyn to accept the minutes. The motion was seconded by Cheryl, and the motion passed.

Treasurer's Report: Del Grady gave the Treasurer's Report. A motion to accept the Treasurer's Report was made by Casey. The motion was seconded by Carolyn, and the motion passed.

Old Business:

- New name tags have been received and were distributed to those members in attendance
- IGEM Set-Up will be Wednesday, October 25, 2017

New Business:

- The following were nominated as officers for 2018.

- President Ling Shurtz
- 1st Vice President (Programs) Carolyn Grady
- 2nd Vice President (Field Trips) David Dobson
- Treasurer Del Grady
- Secretary Lee Elms
- Editor Don Shurtz
- Don made a motion to accept the nominees as the 2018 elected officers by acclamation. The motion was seconded by Carolyn. The motions was unanimously passed

- Other upcoming shows and events were discussed

Break and Project: Casey had just returned from Denver where he attended several of the Denver shows. Casey filled us in on many of the details and led a group discussion about the show. Our thanks to Casey for sharing his experiences.

Raffle: We held the door-prize raffle

Adjourn: The meeting was adjourned at 8:35 PM.

Compiled from notes by Don Shurtz

Meeting

Our November 7 meeting will start at 7:30 PM at the Garland Women's Activities Building. This month's project we will finish the Emu Egg Jewelry Box. Be sure to bring you emu egg project with you, even if you finished it at home.

SHOW and TELL

Blue rocks or minerals
November birthstones: Topaz and Citrine

VISITORS ARE ALWAYS WELCOME

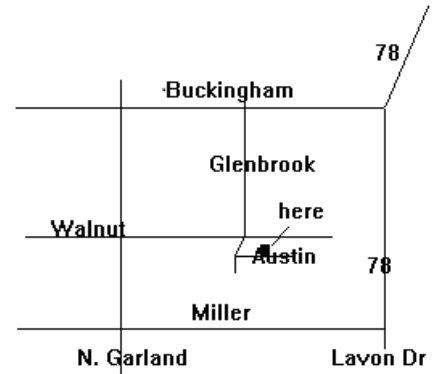
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Don't Forget – Daylight Saving Time ends at 2:00 AM on Sunday, November 5.
Set you clocks back one hour before going to bed on Saturday night!

PLEASANT OAKS GEM and MINERAL CLUB of Dallas



<p>Meetings First Thursday of each month, 7:30 PM Garland Women’s Activities Building 713 Austin St., Garland, TX (Northeast corner of Austin & Glenbrook)</p>
<p>Membership Single Adult: \$16.50, Junior: \$5.00, Family: \$27.50 (Plus badge fee for new members)</p>



PURPOSE: The Pleasant Oaks Gem and Mineral Club of Dallas is organized for charitable and educational purposes to promote interest in the various earth sciences, particularly those hobbies dealing with the art of cutting and polishing gemstones, the science of gems, minerals and metal crafts, as well as their related fields.

CHIPS AND CHATTER
 Pleasant Oaks Gem & Mineral Club
 PO Box 831934
 Richardson, TX 75083-1934

To:

VISITORS ARE ALWAYS WELCOME
Next Meeting: November 2, 2017, 7:30 PM

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