

METEORITE TIMES

Serving The Meteorite Community Since 2002

Santa Luzia Meteorite Restored



2
0
1
9

March

Meteorite Times Magazine

Contents

Paul Harris

Featured Articles

Accretion Desk *by Martin Horejsi*
Jim's Fragments *by Jim Tobin*
Bob's Findings *by Robert Verish*
Micro Visions *by John Kashuba*
Norm's Tektite Teasers *by Norm Lehrman*
Meteorites in the News *by Anne Black*
IMCA Insights *by The IMCA Team*
Meteorite of the Month *by Editor*
Tektite of the Month *by Editor*

Terms Of Use

Materials contained in and linked to from this website do not necessarily reflect the views or opinions of The Meteorite Exchange, Inc., nor those of any person connected therewith. In no event shall The Meteorite Exchange, Inc. be responsible for, nor liable for, exposure to any such material in any form by any person or persons, whether written, graphic, audio or otherwise, presented on this or by any other website, web page or other cyber location linked to from this website. The Meteorite Exchange, Inc. does not endorse, edit nor hold any copyright interest in any material found on any website, web page or other cyber location linked to from this website.

The Meteorite Exchange, Inc. shall not be held liable for any misinformation by any author, dealer and or seller. In no event will The Meteorite Exchange, Inc. be liable for any damages, including any loss of profits, lost savings, or any other commercial damage, including but not limited to special, consequential, or other damages arising out of this service.

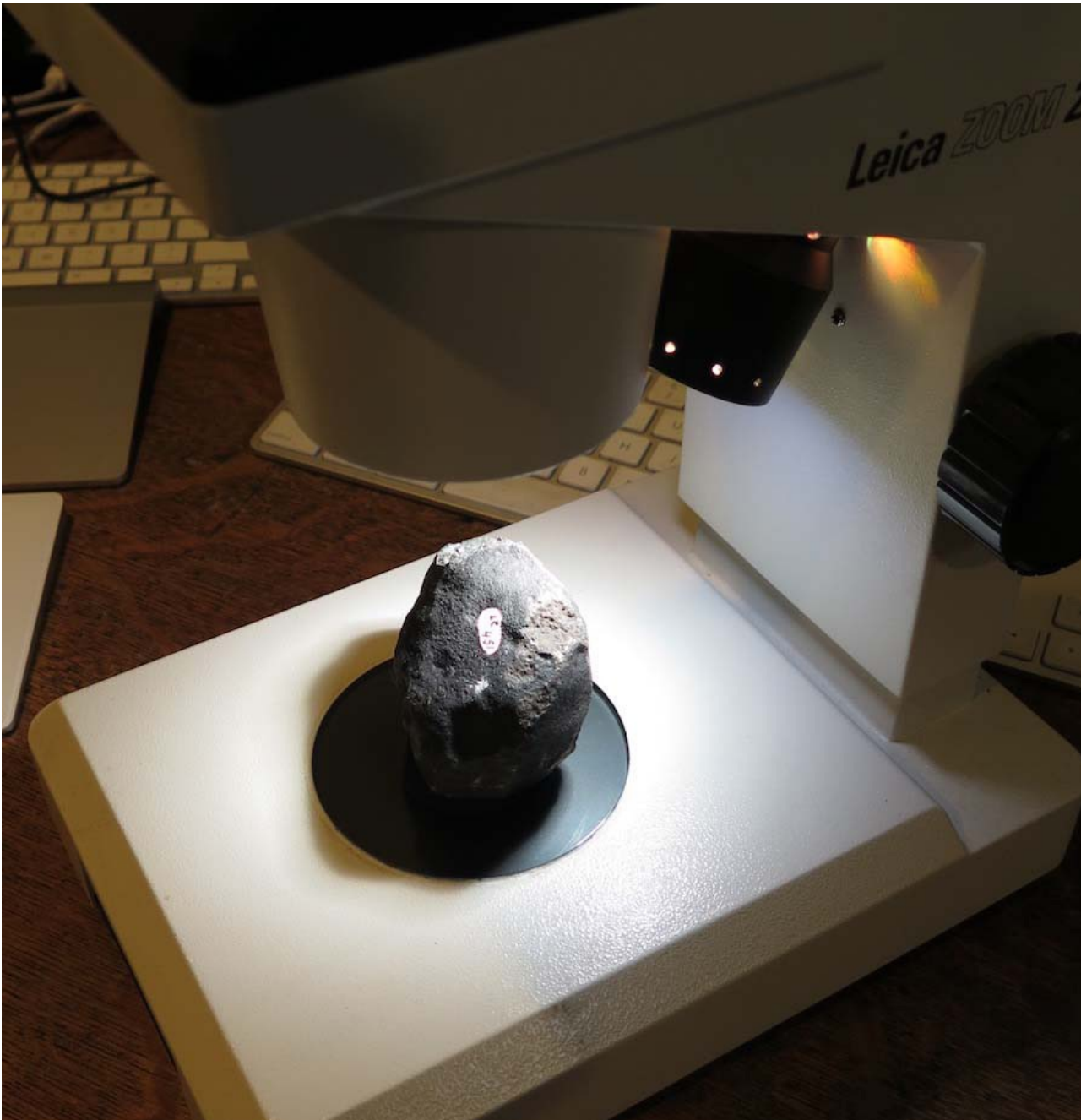
© Copyright 2002–2019 The Meteorite Exchange, Inc. All rights reserved.

No reproduction of copyrighted material is allowed by any means without prior written permission of the copyright owner.

Meteorite Times Magazine

Five Decades of Pure Science: The Allende Meteorite Hits Middle Age

Martin Horejsi

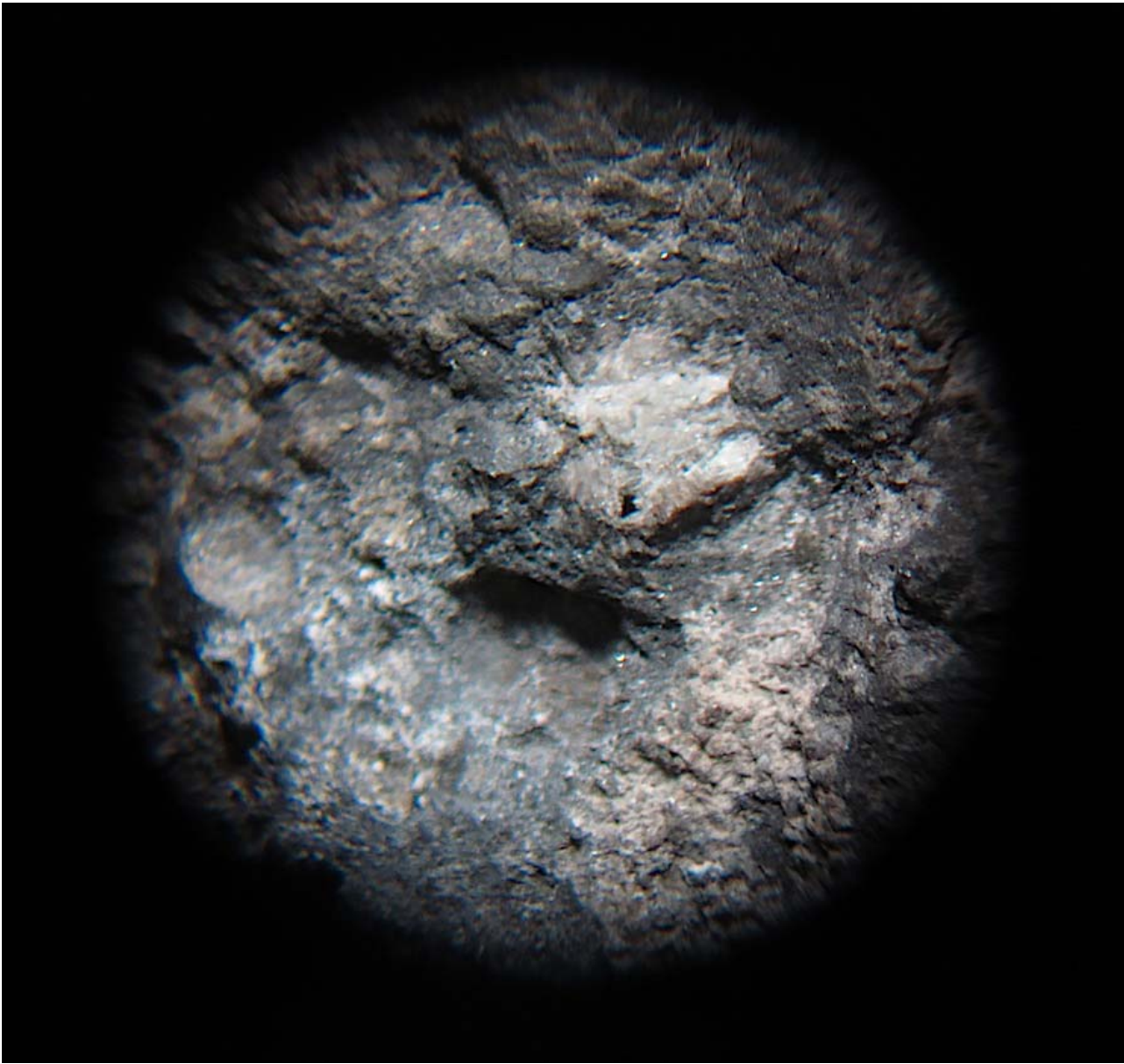


An hour after midnight half a century ago, one of the most important meteoritic events ever appeared in the southwestern sky above the Mexican state of Chihuahua. And by the next morning, a formally very rare class of meteorite was now not only abundant, but as fresh as they come and on it's way to labs around the world. As easily the most studied meteorite in history, Allende has been giving back to collectors and scientists alike revealing more secrets of the solar system every time we take another look at it.



Allende is a CV3 carbonaceous chondrite that fell February 8, 1969 at 01:05 hours. The total recovered weight is several tons. Of the 485 known CV3 meteorites catalogued, only four CV3 meteorites have been witnessed to fall. And comparing mass, one kilogram of the 1907 fall Bali was recovered; 3.5kg of the 1861 fall named Grosnaja were recovered, and 5.3kg of the 2001 fall of Bukhara were recovered. Comparing that to the 2000kg of Allende, one can easily see that Allende was an amazing gift to science.

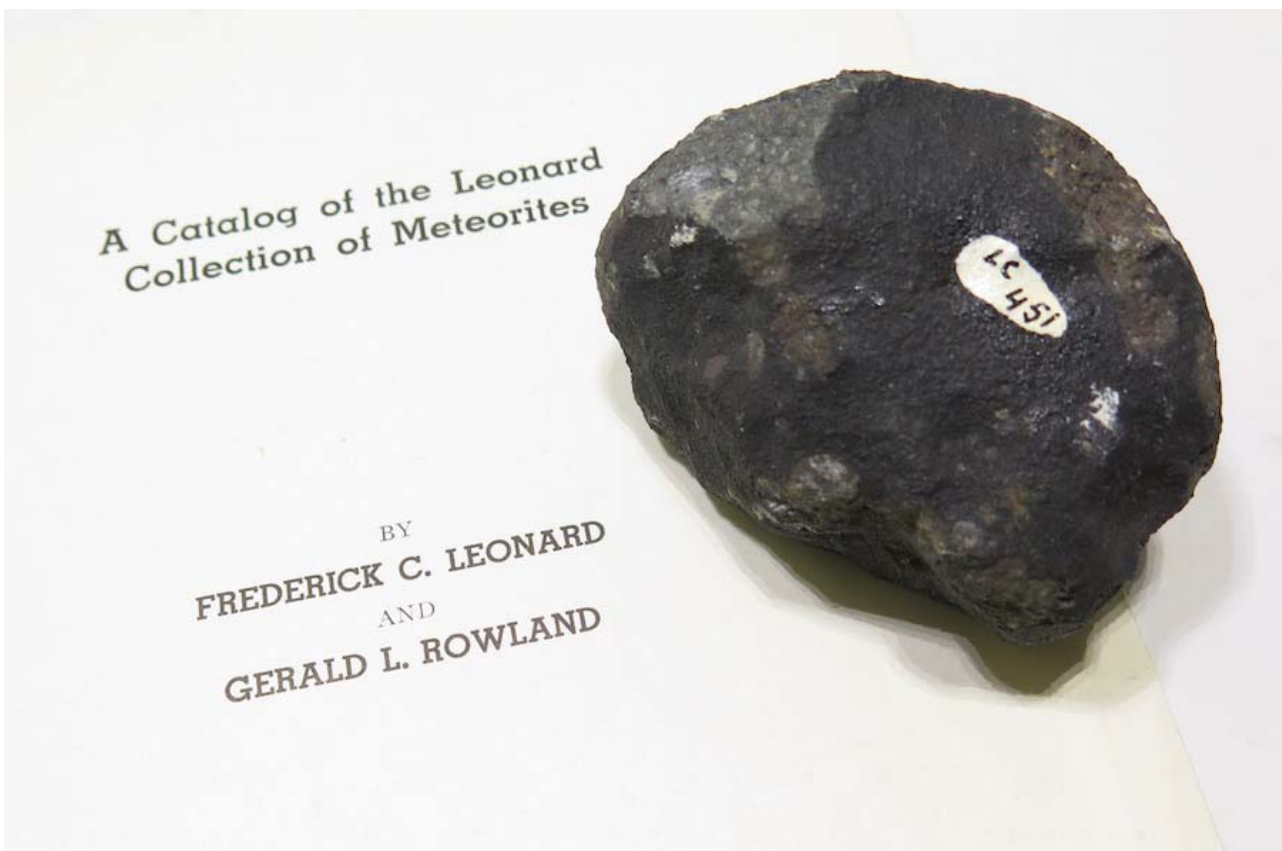




The brecciated Allende is packed with colored clasts, organics, presolar grains, diamonds, amino acids, calcium aluminum inclusions, and in 2012, a new titanium dioxide mineral named [panguite](#) which just happens to also be one of the oldest minerals in the solar system. By the way, Pan Gu is an ancient Chinese god that created the world through the separation of the earth (yin) from the sky (yang).



To celebrate the 50th anniversary of the fall of the Allende meteorite, I took out one of my specimens and spent some time enjoying it through hand lens and microscope. The heavily crusted individual of some 288 grams is also graced with a Leonard Collection number: LC451. While I do have a catalog of the Frederick C. Leonard Collection, it was published in November of 1951, almost two decades before the fall of the Allende meteorite.



Today, the Leonard meteorite collection is part of the [UCLA Meteorite Collection](#). Back in the early 1960s, UCLA purchased 192 meteorite specimens from the Leonard estate, who, by the way, founded the UCLA Department of Astronomy. The UCLA Meteorite Collection today contains more than 1300 specimens.



So now's the time to revisit your own Allende samples. I wonder what scientific wonders are still sitting discovered within Allende? No doubt the next 50 years will be amazing thanks to Allende.

Until next time....

Meteorite Times Magazine

2019 Tucson Trip

James Tobin

Tucson Gem and Mineral show of 2019 was supposed to be a clone of the 2018 show for Paul Harris and myself. But the weather was to take that plan and turn it upside down. We headed out on Thursday morning for the drive to Blythe, California where we would have a nice dinner and stay in a hotel. It works out good doing that. We can leave home at a decent time later in the morning and miss all the rush hour traffic down in the Riverside area on our way out. And it gives us a nice rest rather than driving straight through for 10-11 hours to Tucson arriving too late to even have dinner with friends. We starting out early in the morning from Blythe on the second leg of the drive losing an hour immediately in two miles from the hotel as we crossed the California/Arizona border. We arrived in Tucson early morning just as the showrooms were opening.

Friday morning found us at the 22nd Street Show to see Geoff Notkin and Beth Carrillo because I had some stuff to bring to them and drop off. We had a great chat with them until they got busy and we let them get back to work. We had arranged to meet up with Al Lang in the next tent down at 22nd Street. Which we did and found a few great meteorites for the business. I found a batch of small and slightly larger Brenham stones that I bought for fun for my collection. I had just two things on my list that I wanted to get for sure at the gem show. One was Yooperlites.





Erik Rintamaki the finder/discoverer of these wonderful fluorescent stones was set up at one of the 22nd Street tents. I introduced myself and we talked for a moment. I bought four nice stones. The UV flashlight that I brought to the show worked pretty well on them but he had a great display with many flashlights for customers to use making the proper wavelength of 365 nm. He was speaking on one of the nights as part of the educational lecture series that Suzanne Morrison was doing. We talked a moment about that and he said he would come and see me speak to get an idea of how it was going to go to get better prepared himself. More about the lecture later. Paul and I got lunch at one of the food trucks then headed off to our next stop for the day. It would be a brief hello kind of stop at the Tucson City Center Hotel until it was time to go to a business meeting and check into our own hotel. Saturday morning was to start the show for real for us. I was happy to be free of the big cumbersome package I had been carrying around.



As we were driving and being busy at the gem show on February 1st, the cosmos was busy too. A huge fireball event was occurring over Florida and Cuba. With a great trail of smokey dust and blinding flash and pounding detonation, a great fall of meteorites occurred over the village of Viñales, Cuba. It was unclear for a few days if any of the stones would make it out of the country. But, just about the time we arrived home from the show, five days after the fall, beautiful black stones began appearing at the gem show and were being cut into slices. It has a similar appearance to Chelyabinsk. It is apparently a breccia, with bands of melt and shock veins. It has a nice scattering of FeNi grains and an abundance of small bits of troilite. Chondrules are common and fairly distinct. I do not make guesses as to type leaving that to be exactly determined by scientists. Congratulations to those who were still at the gem show and got to see stones in person.



For months it had been planned that we would go Saffordite hunting with friends on Sunday but the weather was going to be terrible on Sunday and even though I could drive into the location without problems with my 4x4 the other car coming along could not. And sitting in the car waiting for breaks in the rain to hunt for a while was not going to be fun. So we had moved up the hunt to Saturday and pushed back the gem show until Sunday. We met up with Rob Wesel, Logan Wesel (Rob's son his first Tucson gem show), Jason Phillips, and Mitch Noda at their hotel just after 6 am and headed toward Safford, Arizona. The plan was to stop somewhere at a McDonald's for breakfast before heading out into the desert. As it turned out we did not stop until the McDonald's in Wilcox. We had breakfast and drove the short distance until we got off the interstate and made it to the road to the Saffordite area. We found the great paved road of last year had turned into a pothole nightmare. Some of the potholes were nearly two feet deep. I slalomed my way down the road weaving around the missing pavement with Mitch following doing the same dance around the cavernous holes in the roadbed. But we made it with no car damage. I gave the new guys a brief training session in Saffordite hunting. I said, "Let me go find one so you can see what they look like on the ground." I was taking a little chance that I would not hunt too long. I found one in about a half minute and called them over to see it in place. I stayed with some of them until they had found a couple on their own. Then I was off to find myself some. I was so far from the car by the time I was finished training the last friend that I just kept hunting and finding them without thinking that I had not put on sunblock or a hat or gotten any more supplies than just water and snacks. Later after hours in the sun, I would regret not going back to the car early. Everyone did very well at hunting. By the end of the day, they all had baggies with many Saffordites in them. Paul had done very well and I had done better than last year and was guessing I found over 500. Paul and I met up at my car about 3:30 in the afternoon and we waited for the other guys to reappear one by one. I wanted to get out of the area and back to good road before dark. I did not want to maneuver my way through the potholes in bad light. We took a group picture and were on the road by just after four in the afternoon heading to the pizza restaurant Paul had googled up for him and I the year before. We had a great fun meal and finally said goodnight.



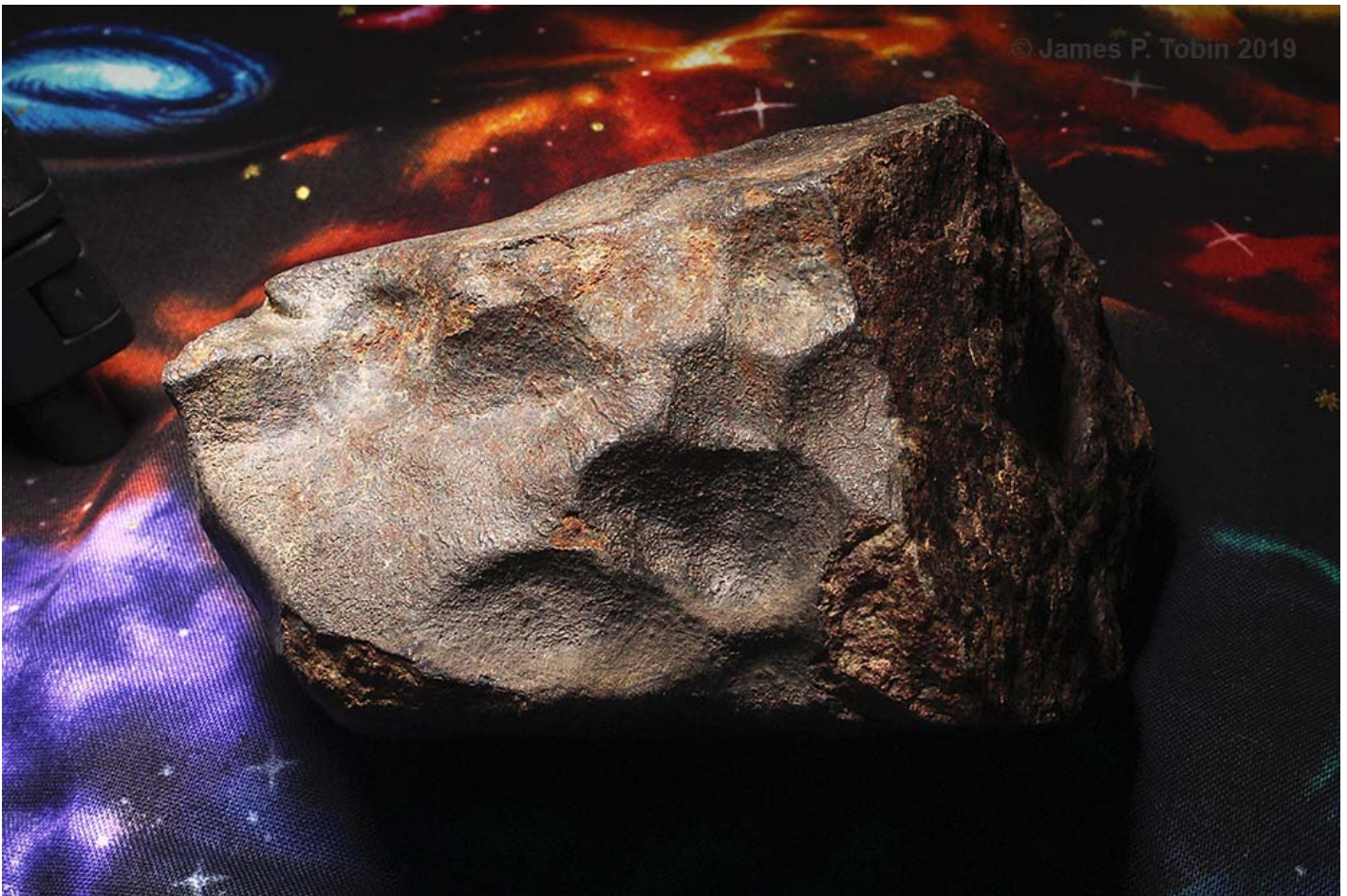
Pictured left to right at Mitch Noda, Logan Wesel, Paul Harris, Jason Phillips, Rob Wesel.

Sunday was now the first real full day of walking around the show. Its the day which always begins with a visit to the hotel where Mike Miller and Blaine Reed show off their goodies. We had a nice long visit with Mike. His room sparkling as always with beautiful slices of iron and pallasite meteorites. It was raining and miserable out. We were really happy we changed the hunt to the day before we would not have tried hunting at all. Oh, by the way, we counted the Saffordites at the hotel and Paul had found almost twice what he did the year before and I had found 597. They would have to be cleaned to see how many were gemmy and how many were banded or opaque. Still, that was a lot of bending and picking up and I was feeling it the next morning. I stopped holding them up to the sun to inspect their clarity because it ruined my vision for looking at the ground for a couple minutes every time. I just put all the Saffordites in the bag and would do the sorting at home after cleaning them in the ultrasonic cleaner.



I bought a couple items from Blaine and we headed over to the Riverpark which is called something else this year I think, the names change so fast I can not keep up. It was still raining cats and dogs. We had to park in the last parking lot as always. In fact, it had a sign saying "Lot Full" but the attendant waved me in and we actually got a spot very near the entrance. Paul had as always been forward planning and brought an umbrella. I had a hood rolled up and concealed in my coat collar which I pulled out for the first time in a decade. We visited Erich and Silvia and chatted with Dana and then headed just across the hall to Dustin's room. We chatted with him and then he began a long business discussion with Paul about stuff I am less involved in. So I headed back to the car with Paul's umbrella to retrieve a batch of my books that Dustin wanted. Last year I was doing a lot of book deliveries. This year I only took about twenty to the show. I was glad for the umbrella as it rained quite strongly while I made the hike to and back from the car.

I always go on down from the Pueblo Inn, (Riverpark) hotel to the Day Inn which is also called something else now. To see my friend with the tables of NWA unclassified meteorites. I usually find some to buy. This year only one named meteorite was on my want list so I got more of these mystery meteorites than usual. One was a larger 826.3 gram stone with slickensides on one portion and great regmaglypts on much of the rest of the surface. Two images of this meteorite are shown below.



I also got about ten other unclassified meteorites from him. We ran into Melinda Hutson and Dick Pugh from Cascadia Meteorite Lab at the same booth and chatted for a while about the state of meteorite classifying today. Dick found a few specimens that must have called out to him. I left with a much heavier bag than I came with. Over a kilo of stones from the one stop. But they will be hours of fun for me with my camera and

at the saw and lap.



We had not spent more than an hour or so at the Inn Suites (old name) so with the hope that we could find a parking space we headed that way. The rain so far over the last days had not seemed to discourage the crowd. There were many people at the hotels. We got a spot to park very near ET's room so that was our first room to visit. Edwin Thompson is a fellow writer and all around great meteorite guy and friend. He shared some stories of the real success he has experienced with his book "Earthunder", I am so proud of him. I have done no promotion of my book with home selling and home buying and moving all last year. But might try harder this year to promote it. It was never going to have a huge readership with its very narrow focus on one year at Meteor Crater. I got a couple more pieces of the Sericho pallasite from ET. He had very little Sericho in his room compared to last year. It is always amazing to me how our community small as it really is can absorb in just a year or so even huge meteorite finds. I had gotten many pieces of Sericho in 2018 and had great fun grinding and polishing windows on them. Some I etched some I left polished. I put them into a sealed glass jar with concealed silica gel. They looked beautiful when I was done and remain so still. But I wanted a couple more to try cutting into halves or slices.



I have never really done slicing on pallasites or irons. I have cut hundreds of stone meteorites over more than 50 years of lapidary work. So it is time I learned something about doing the other meteorite types. Ultimately, ET got very busy and we waved goodbye across the sea of humans pressing into his room and headed out to get a late lunch. There is nothing like a lukewarm hotdog on a rainy day at the gem show with a bag of chips and a soda. Yuck! Every year we end up doing it. We at least stay away from the

undercooked hamburgers now. I wish the food in the tent at the Tucson City Center Hotel (correct name) was better because now that there is no parking it is not so easy to leave and get something nice at a restaurant and later return again. If you have a great parking spot there is a strong desire to stay and not give it up. We had seen Pani once and waved again at him as we went for lunch. After eating our delicious meal we headed to Global Treasures and our friends Pieter and Debra. It has been a year since we finished the collaboration on my book "Drilling For Meteorites" which would never have happened without them. We chatted with them until they also got busy. We moved upstairs to see Anne Black at Impactika. I had wanted an individual of Saint Aubin it was the only meteorite on my list this year. I had a great slice that I got from Alain Carion years ago. There had been the enormous recovery of many tons of Saint Aubin during the year and I hoped to get a small individual. But nothing like that has become available yet apparently. I am sure that there will be hunting in the area and that many smaller and tiny masses will be found. My last name is derived from Saint Aubin. As people moved from country to country during and after the time of the Normans and Saxons the pronunciation changed. Finally, it became what it is in Ireland.

We made our way around the Inns Suites seeing everyone else that was there. We spent a while chatting with Mike Farmer. We visited with Serge and Dima and I got a Sikhote Alin print of the P. I. Medvedev painting that they had. It will look great when framed in my office once it is cleared of boxes. Four months after we moved and my office is still not completely ready to work in. But the workshop is getting there, it is about half set up, so some progress. It would not be until a couple more days that we finally made it to La Memoire de la Terre; Bruno and Carine's room. We spent some time with them and got something nice to resell.

There is almost nothing that we enjoy as much as getting to have a meal with friends while we are in Tucson. We had a wonderful meal with Ruben and Cynthia Garcia and Bob Cucchiara, Larry whose last name I have never known, and Mike Miller, at Mimi's Cafe. Another night we had a nice dinner with our friends from Canada Peter Hayashida, Mike Hayashi and Dave Hayashida at a cool, kind of trendy restaurant in downtown Tucson. There was nothing but fun that night and great stories. After several tries to work out a schedule we had breakfast with Geoff Notkin at BBC (Benson Breakfast Club). When we can sit and have a visit with Geoff it is always a high point for us during our Tucson trip. He is fantastically busy and it is very special that he takes some time to spend with us. He has a new book that will be reviewed in a separate article but I will just take a sentence or two here to say that it is not really a redo of the previous version, but almost a completely new and much-expanded work on meteorite hunting. It is a beautiful book with wonderful photography. It is entitled "How To Find Treasure From Space" and is a must-read for all meteorite enthusiasts. We always hear the best stories when we have a meal with Geoff and this year was no exception. But ultimately he has to go to the 22nd Street Show and we have to move along too. Monday was to be our last day at the show, but the weather kept throwing things at us all the time we were in Tucson. There was going to be a snowstorm at home in Tehachapi which could close the 58 freeway. We would perhaps have to turn around and get a hotel room in Mojave until the road was reopened. So we extended our stay with our hotel and decided to go home early Wednesday instead of Tuesday.

Monday night I was to give a talk on "The History of Meteor Crater" as the first of the series of speakers in Suzanne Morrison's new education lecture program. I was to speak for 30 minutes and then take questions for an additional 15 minutes, the second speaker of the evening would present after a short break. The lecture was video recorded with a high-quality camera. I wore a wireless microphone. It was live streamed from Suzanne's phone to a Facebook page. There was a little problem with the live feed because the bandwidth was not big enough with the account the school gave her access to. That was fixed for the following nights. But the professional video was fine and will be archived for the future along with all the other lectures in years to come. I condensed the 50,000 years of Meteor Crater's history and stories of the major activities at the crater into 30 minutes and then came the part I really like. I enjoy the Q&A after much more than giving a lecture. There were great questions from the room and also the internet. But not enough time I could have gone on and on with the Q&A. Paul and I had gotten an early dinner before my lecture so by the time all the evening's festivities were done it was time to get something for dessert. We pulled into the parking lot of the Denny's next to our hotel and had chocolate shakes. You know the kind that comes to the table with the extra in the metal mixing container so that you really get much more than just a single glass of shake. It was just the thing to have before heading to the room for the night.

Tuesday was now an extra day for us and we spent it mostly at the Inns Suites. We finally got some time with Pani and nearly cleaned him out of Libyan Desert Glass. I found several NWA stones he had that I really needed, (wish I could insert a smiley emoji there). Spent a lot of the day with ET and I finally got a hat. After more than 20 years of going to Tucson, I had never asked him for one or bought one of his hats. But I did ask for one this year and it will be treasured. Toward the afternoon we headed out to say goodbye to everyone and go for dinner. This would be one of the only meals we had alone. Even breakfasts had

mostly been with friends this year. We picked The Outback for a carnivore meal. I got the ribs and chicken and Paul had a steak. As the Coneheads say "We Enjoyed It!" We had nothing to eat for breakfast on the drive home and we take the Phoenix bypass of Highway 8/85. There was not going to be anywhere along the way to stop in the morning. So we headed to Walgreens and got something to eat in the car while driving. The Bloomin' Onion from dinner bothered me while I was trying to sleep and I finally woke Paul by accident so we just got up and left at about 4 in the morning. It was raining buckets again and it continued raining for about an hour and a half of the trip home. Finally, the rain stopped and the sun came up and driving got a lot more relaxed for me. Big tractor-trailer rigs were passed me at over 75 miles an hour in pounding rain and it was frankly a little unnerving. Hometown Tehachapi was covered in snow when we got there but our streets were clear to drive on and so came the end of a wonderful 2019 Tucson gem show.



We have cleaned the Saffordites and sorted them. I had many that were gemmy clear and so did Paul and

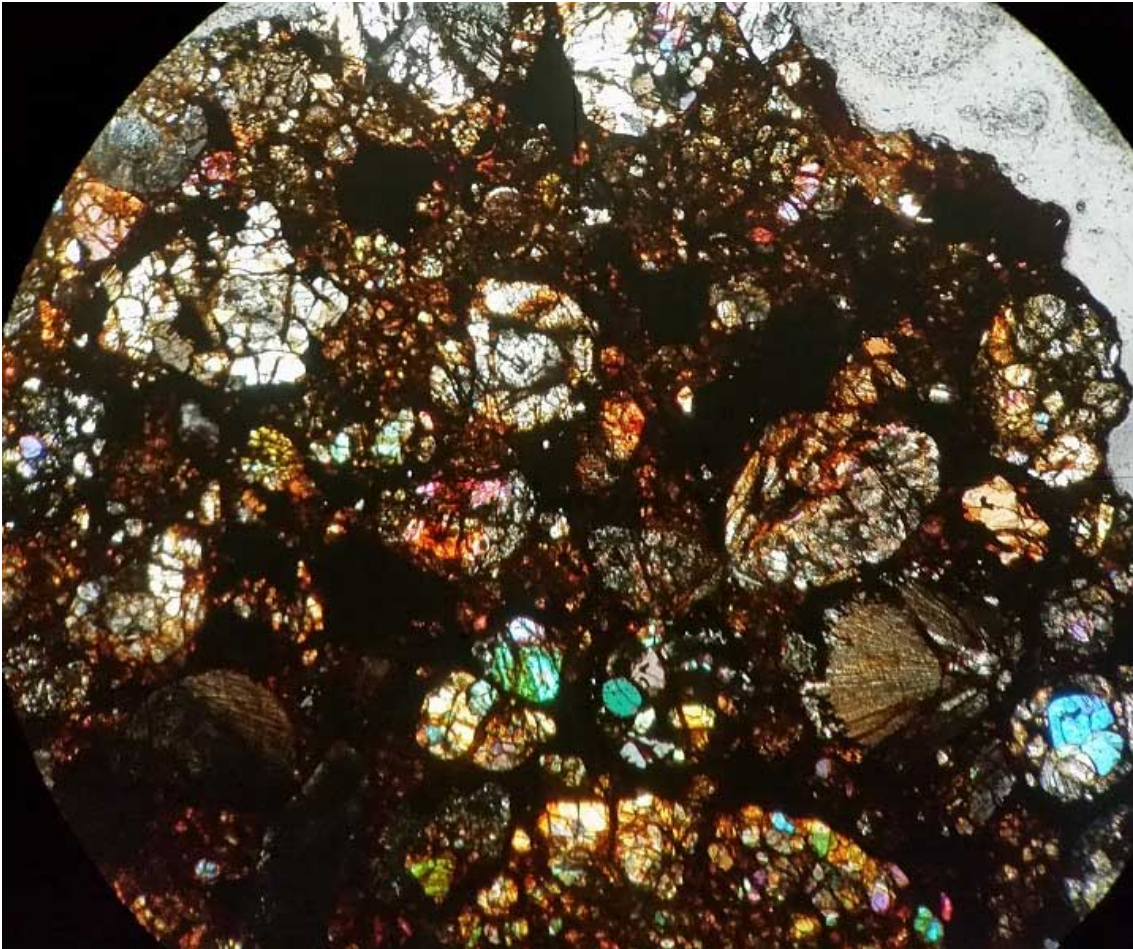
we have put those together into a batch we are offering for sale. Next year we will likely return to find more. It is great fun and maybe friends will want to go along.

Meteorite Times Magazine

Bob's Bulletin – Vol. 5 No. 1

Robert Verish

A newsletter for unclassified meteorites found in the USA.



Some more good news to share with the readers of this newsletter. Several small donations have been made towards paying for the cost of getting classified some of the Ordinary Chondrites (OC) that have appeared in these Bob's Bulletins. Now that I have found some "approved classifiers" that are willing to characterize OC meteorites, some private donors have come forward, and to do their part to prevent these USA finds from perpetually languishing as "Unclassified".

Now, trying to find an available microprobe with the lowest hourly rate (and getting access to it) is the constant search.

It is gratifying to see that this problem of U.S. meteorite finds going unreported, not to mention remaining unclassified, is finally getting some attention.

In the meanwhile, I will continue assigning provisional "UU" numbers for all Unclassified U.S. (UU) Ordinary Chondrite (OC) finds that I can personally authenticate.

In order to make more time for turning-in more meteorites for classification, this month's edition of the "Bulletin" will be kept short.

This month we will be listing only the "classifications" we have obtained for some of the USA finds previously seen in this newsletter. This is an obvious departure from prior editions, where we listed only "Unclassified U.S. meteorite finds". Although this was the objective (to get these "orphaned" chondrites classified), this list of classifications is only the tip of an iceberg of a large number of UUOC still needing authentication, which can only be managed through sustained funding.

*** Note: Not all of the meteorites mentioned in this month's article were found by me. ***



Newsletter for Orphaned Meteorites from USA – Volume 5 No. 1 — March 2019

Meteorite Classifications Method: Electron-microprobe, Petrologic-microscope

Meteorite Specimen — Class & Petrologic Grade — Shock Stage — Weathering Grade:

UU000410	_____	H5 — S4 — W4	UU031025A	_____	H3 — S4 — W3
UU031025B	_____	L5 — S4 — W3	UU061104	_____	L5 — S4 — W4
UU080905A	_____	L5 — S4 — W4	UU080905B	_____	L5 — S4 — W4
_____	L5 — S4 — W3	UU091231	_____	H4 — S2 — W5	UU101210
_____	H5 — S1 — W2	UU110402	_____	H5 — S2 — W2	UU111018
_____	L5 — S4 — W1	UU140527	_____	H4 — S2 — W4	UU140530A
_____	L6 — S2 — W5	UU140531A	_____	L5 — S4 — W4	UU140531B
_____	L5 — S4 — W4	UU140531C	_____	H5 — S4 — W4	UU150814A
_____	H5 — S4 — W4	UU150814B	_____	H5 — S4 — W4	UU161111
_____	L5 — S4 — W5	UU161112	_____	H5 — S3 — W5	UU161113
_____	H5 — S3 — W4	UU181003A	_____	H4 — S4 — W2	UU181010A
_____	L5 — S4 — W4	UU150802	_____	H4 — S4 — W4	

Example “Classified” Meteorite Specimen Description

Field ID Number	UU090312
Newsletter (first described)	Vol. 04 No. 4
Location	Arizona, USA
Thin-section ID Number	V-RED
Dimensions	12mm x 10mm x 7m
Weight (TKW)	2.8 grams
Type Specimen	1.4gram endcut — plus thin-section
Class (Petrologic grade)	Ordinary Chondrite (L5)
Shock Stage	S4
Weathering Grade	W3

Macroscopic Description — R. Verish

This meteorite is a well-rounded, whole individual stone. The dark,

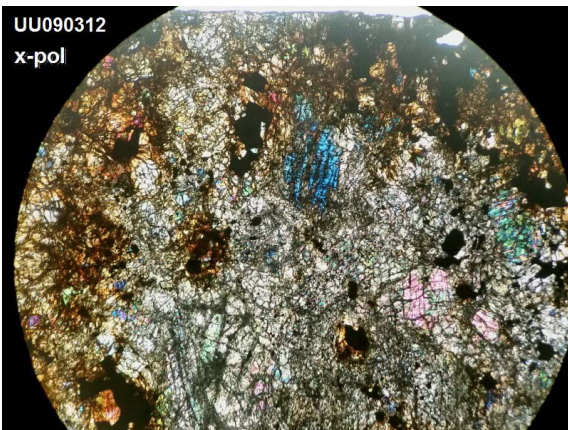
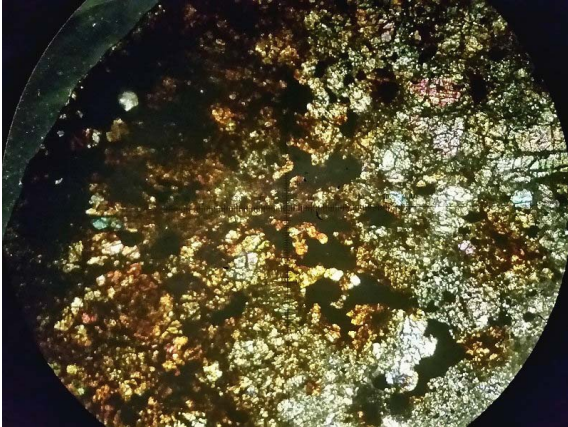
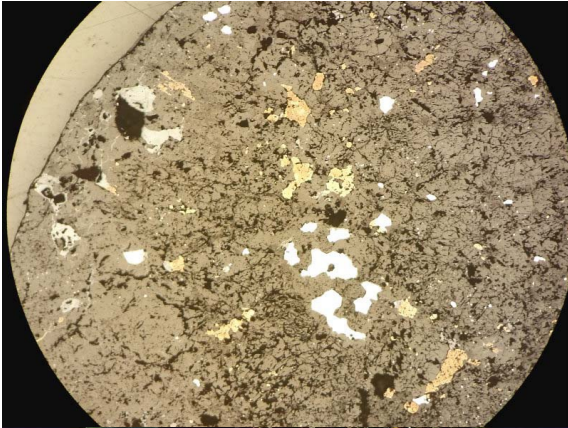
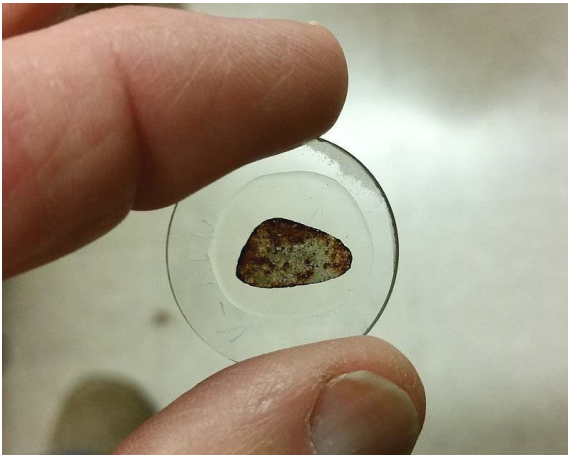
Field Number: UU090312
gray. The exterior of the chondrite is covered 90% with a thick, relict fusion crust. Very little in the way of rust-spots. The interior is a dark-brown, compact matrix with very low metal-grain content, and few troilite grains. The chondrules and inclusions are not distinct, but don't appear to be variable in size.

Geochemical Description — D. Shiekh

Olivine, Fa 22.58 ± 0.9 (N=25);
orthopyroxene, Fs 19.37 ± 0.9 (N=25),
Wo 2.50 ± 0.7 (N=25).

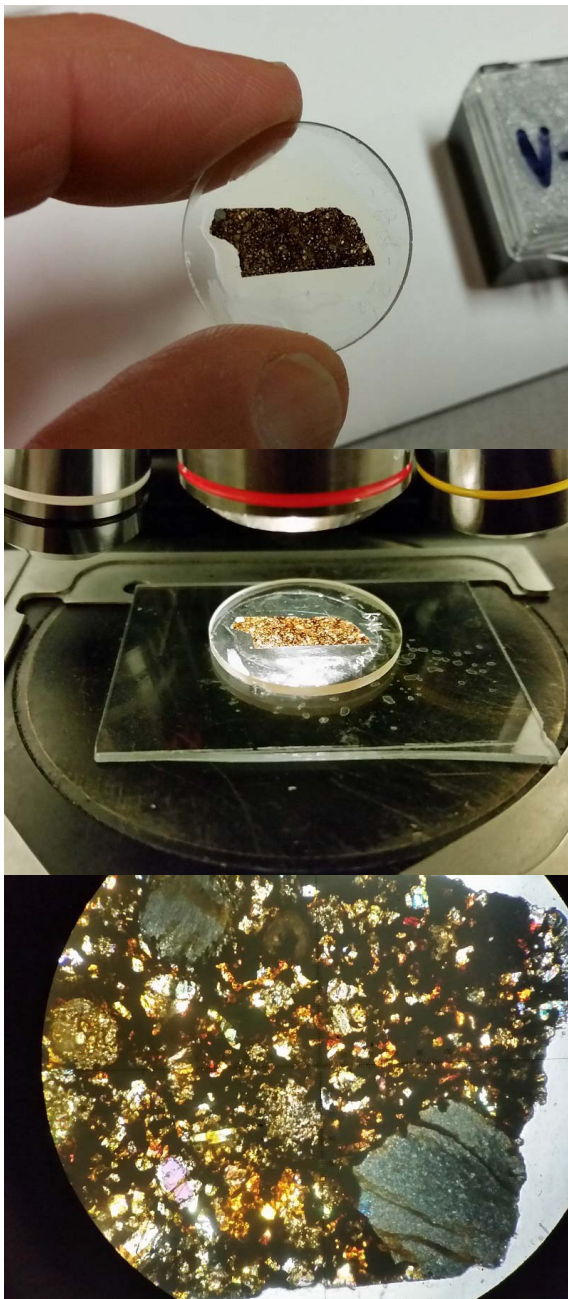
USA "Classified" Meteorite — Images for Specimen ID# UU090312 (L5 S4 W3)





The above example is one way I can show how private donors are funding citizen-scientists and other volunteers, in helping reduce the number of meteorites (found here in the USA) from languishing as “unclassified”. Hopefully, more attention will be drawn to this problem caused by the lack of official funding, and more donors will come forward and help get these “U.S. orphans” classified and cataloged.

USA “Classified” Meteorite — Images for Specimen ID# UU000410 (H5 S4 W4)

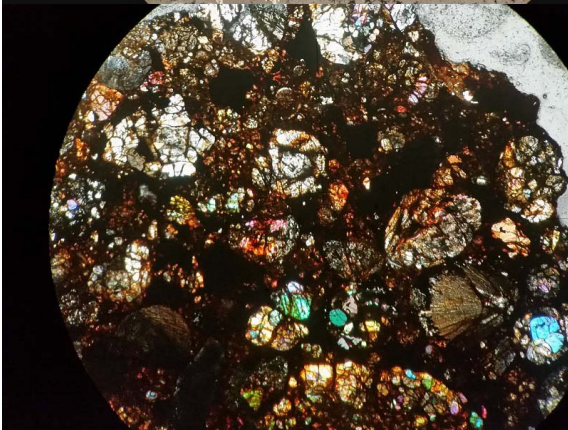
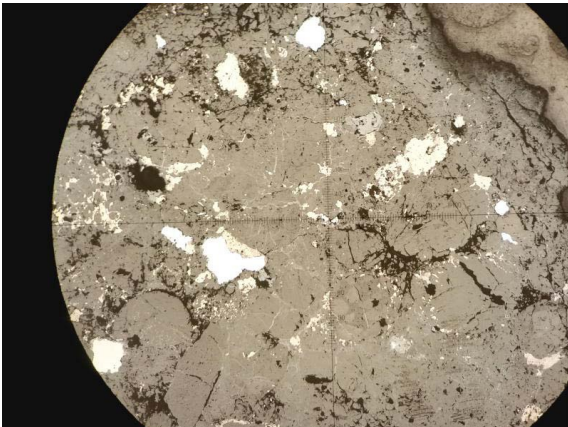
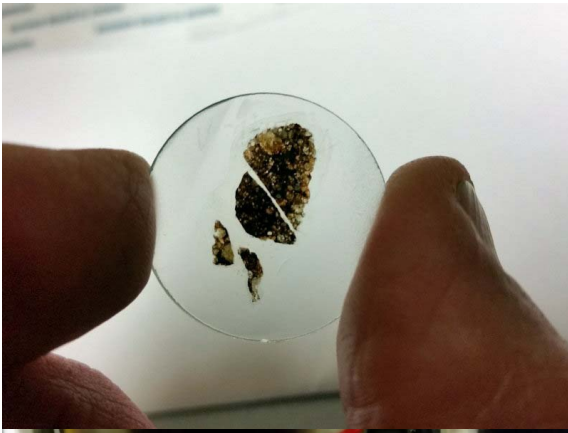


Above are the images of "UU000410" after being cut, and thin-section made, which was used in its analysis, resulting in the classification: H5 S4 W4

USA "Classified" Meteorite — Images for Specimen ID# UU140527 (H4 S2 W4)

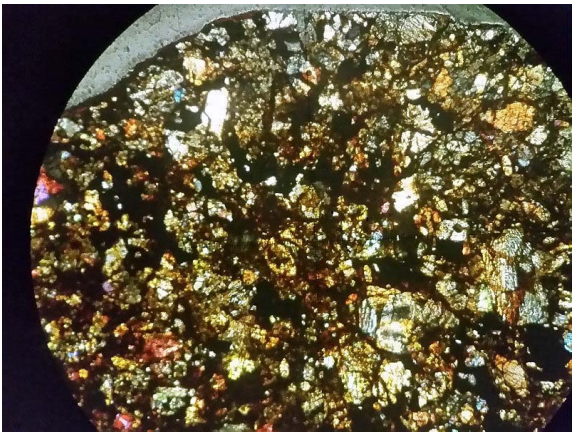
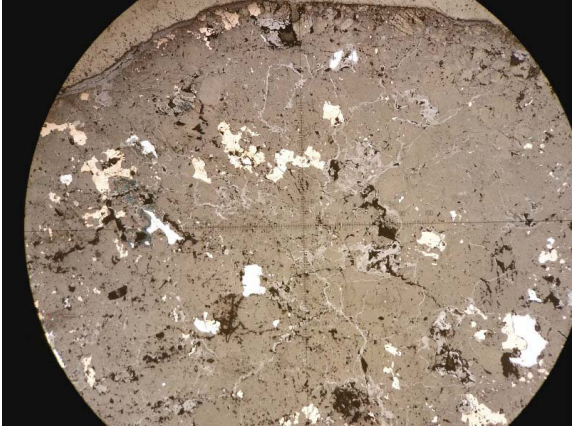


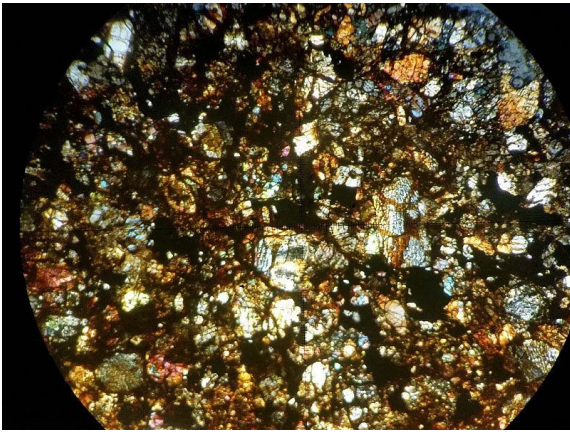




Above are images of specimen "UU140527" and the thin-section made from its type-specimen, which resulted in its classification: H4 S2 W4

USA "Classified" Meteorite — Images for Specimen ID# UU150802 (H4 S4 W4)





The images above are of specimen "UU150802" and of a thin-section made from a sample, which was analyzed and resulted in this classification: H4 S4 W4

Note: All thin-sections are a 1"-round, double-polished, uncovered glass-slide.

I realize that the above images have already appeared in previous volumes of Bob's Bulletins, but viewing them again (now that we know their classification), it is more educational. Also, it is satisfying to the finders, and especially the donors, who funded the analysis, to see their meteorites classified.

In the meanwhile, I will do my part and continue to solicit donors, so that more thin-sections, such as these, can be made and submitted for classification.

References:

[Bob's Bulletin – Vol. 4 No. 4](#) — In my [12th Bulletin](#), published "Provisional Numbers" for meteorite specimens: UU090312, UU000410, UU140527, and UU150802, which were submitted for classification.

[Bob's Bulletin – Vol. 4 No. 3](#) — In my [11th Bulletin](#), I published "Provisional Number" UU180513, which is awaiting classification.

[Bob's Bulletin – Vol. 4 No. 2](#) — In my [10th Bulletin](#), I published "Provisional Number" UU180122, which has since been classified and approved as "Willcox Playa 011".

[Bob's Bulletin – Vol. 4 No. 1](#) — In my [9th Bulletin](#), I published a table of six (6) "Provisional (UU) Numbers" (for Unclassified U.S. meteorites) that I assigned to some finds from four (4) separate localities:

PROVISIONAL # — Field ID No. — Mass — Notes: each stone has had its GPS coordinates recorded. **UU151212V** — CA151212V — 129.6g — one of 22 fragments found in a tight cluster by Mark Bittmann, et al, (and this is the 1 fragment found by Bob Verish). **UU160618** — CA160618 — 52.5g — type-specimen cut & thin-section — found by Mark Bittmann **UU170407** — CA170407 — 16.3g — type-specimen cut & thin-section — found by Mark Bittmann **UU161111X** — C161111X — 1,075g — sample cut & thin-section; main-mass with Bob Verish **UU161212F** — C161212F — 18.25g — type-specimen cut & thin-section; main-mass with Bob Verish **UU161213H** — C161213H — 70.8g — type-specimen cut & thin-section; main-mass with Bob Verish

*** Note: The above 6 meteorites represent 4 localities. ***

[Bob's Bulletin – Vol. 3 No. 1](#) — In my [8th Bulletin](#), I published a table of sixteen (16) "Provisional (UU) Numbers" (for Unclassified U.S. meteorites) that I assigned to some finds from an existing DCA, but were refused entry into the MBD:

PROVISIONAL # — Field ID No. — Mass — Notes: each stone has had its GPS coordinates recorded. **UU140705A** — CA140705A — 2.0g — physically-paired to UU150110 **UU140705B** — CA140705B — 8.25g — sample cut & thin-section; main-mass with Mark Bittmann **UU140719** — CA140719 — 8.9g — sample cut & thin-section; main-mass with Mark Bittmann **UU140726** — CA140726 — 4.7g **UU140726B** — CA140726 — 15.8g **UU140819** — CA140913A — 1.2g **UU140913A** — CA140913A — 5.2g **UU140913B** — CA140913B — 3.4g **UU140919** — CA140919 — 5.9g **UU140923** — CA140923 — 8.9g **UU141001** — CA141001 — 8.9g **UU141220** — CA141220 — 2.6g — sample cut & thin-section; main-mass with Mark Bittmann

UU141227 — CA141227 — 1.9g **UU150103** — CA150103 –11.6g — physically-paired to UU151228
UU150110 — CA150110 — 2.8g — sample cut & thin-section; main-mass with Mark Bittmann —
physically-paired to UU140705A **UU151228** — CA151228 — 1.9g — sample cut & thin-section; main-
mass with Mark Bittmann — physically-paired to UU150103

*** Note: All of these meteorites were found from a single locality, an officially designated DCA. ***

In all of my previous Bob's Bulletins, I prefaced each one with an explanation of what I mean by the phrase "orphaned-meteorites from the USA". I defined "orphaned" as being meteorite "finds" that are recovered in the U.S., but are not being recorded. Contrary to what you may think, these meteorites are being reported, but the finders of these meteorites have encountered resistance in getting provisional numbers assigned to their finds, even when the (obvious) meteorites were recovered from officially designated "Dense Collection Areas" (DCA). These meteorites are being ignored. This is in addition to the current practice by the official classifiers of meteorites to refuse to classify Ordinary Chondrites (OC). Without an "official" classification, meteorites cannot get an officially-approved name by the Nomenclature Committee of the Meteoritical Society, and hence, cannot be cataloged. And hence, uncatalogued meteorites are "orphaned".

Unfortunately, the vast majority of new U.S. finds are destined to remain orphans.

In my preface I would go on to explain that these "Unclassified U.S. finds" (UU) were being orphaned from the family of "approved" meteorites for the following reasons:

- 1) The lack of funding for U.S. researchers to authenticate, classify, and document/record these U.S. OC finds has resulted in several new [negative] trends, all which discourage finders from reporting their finds.
- 2) The increasing trend of commercializing the classification of meteorites by U.S. researchers has priced U.S. OC finds out of the market, and
- 3) The increasing trend of U.S. researchers to turn away OC finds, even when finders of U.S. OC meteorites are willing to pay for their classification.

Bob's Bulletin – Vol. 2 No. 3 — In my **7th Bulletin**, I published a table of six (6) "Provisional (UU) Numbers" (for Unclassified U.S. meteorites) that I assigned to some recent finds:

[UU160428-14](#) [UU160428-15](#) [UU160428-16](#) [UU160428-17](#) [UU160428-18](#) [UU160428-19](#)

*** Note: All of these meteorites were found by one person (not this author) – all in one day. ***

Bob's Bulletin – Vol. 2 No. 2 — In my **6th Bulletin**, I published a table of the increasing number of unclassified U.S. meteorite finds and petitioned that crowd-sourced funding be used for volunteers to compile and record these finds for later classification and official-approval, until such time that this function can be properly funded with U.S tax-dollars.

Bob's Bulletin – Vol. 2 No. 1 — In my **5th Bulletin**, I published a table of all the unclassified finds from Coyote Dry Lake DCA that were reported prior to 2007.

Bob's Bulletin – Vol. 1 No. 4 — In my **4th Bulletin**, I reported that several U.S. researchers were volunteering their time and effort to record and publish meteorite falls and finds, such as, Creston and Misfits Flat. I suggested that this method of cataloging newly found US meteorite specimens could be expanded, but the main hindrance is that there is no funding for this kind of effort.

Bob's Bulletin – Vol. 1 No. 3 — In my **3rd Bulletin**, I proposed the idea of an on-line database for these "orphaned" and other unclassified U.S. meteorites. This would have to be an all-volunteer effort, much in the same manner that the American Meteor Society has established the Fireball Reporting System. This database would give finders a central point to report their finds and have a field ID number issued to them. This "Field ID" would reflect which US state and date of find. The function of this database should not be confused with already established processes of getting a meteorite "classified", which is obviously way more labor intensive and costly.

Bob's Bulletin – Vol. 1 No. 2 — In my **2nd Bulletin**, I went into more detail about why I use the phrase "orphaned-meteorites from the USA". I focused on the lack of U.S.-tax-dollar-funding and why no funding was going towards the classification of these particular meteorites. In hindsight, I now realize that I should

have pointed-out that there is also a lack of funding for just authenticating and recording that a U.S. meteorite has been found. This function should never be confused with “classifying” a meteorite, which is obviously way more labor intensive and costly.

[Bob's Bulletin – Vol. 1 No. 1](#) — In my [first Bulletin](#), I introduced the phrase “orphaned-meteorites from the USA”. I defined these “orphans” as being unwitnessed-fall Ordinary Chondrite (OC) meteorite “finds” that are recovered in the U.S. Unfortunately, the vast majority of U.S. finds are of this type. I went on to write that these U.S. finds were being orphaned from the family of “approved” meteorites for the following reasons:

1) The lack of funding for U.S. researchers to authenticate, classify, and document/record these U.S. OC finds has resulted in several new [negative]; trends.

2) The increasing trend of commercializing the classifying of meteorites by U.S. researchers has priced U.S. OC finds out of the market, and

3) The increasing trend of U.S. researchers to turn away OC finds, even when finders of U.S. OC meteorites are willing to pay for their classification.

[Meteoritical Bulletin](#): the search results for all provisional meteorites found in “USA” – Published by Meteoritical Society – [Meteoritical Bulletin, Database](#).

If you “Click” on the header titled “Assigned On”, it will change the table to chronological order by date of assignment, and it will show that – SINCE 2014 – there have been no new Provisional Numbers assigned to a find made in the United States!

[Meteorites of California](#) the list of formally-recognized California meteorite falls and finds.

My previous Bob's Bulletins can be found [*HERE*](#)

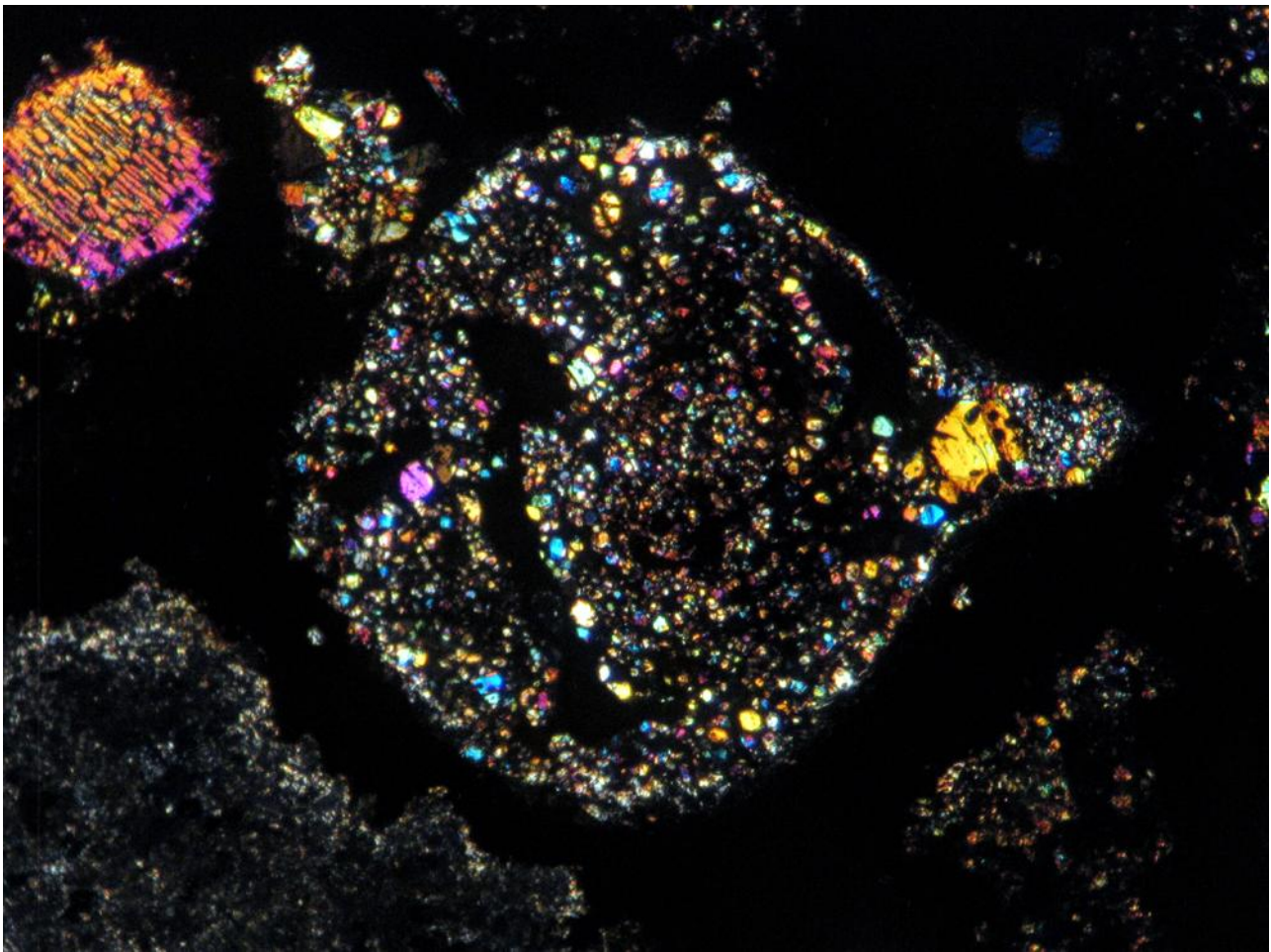
If you would like to sponsor any of these orphans, and help in getting them classified, in order to get them entered into the Meteoritical Bulletin Database, then please contact me by email:

[bolidechaser at yahoo-dot-com](mailto:bolidechaser@yahoo-dot-com)

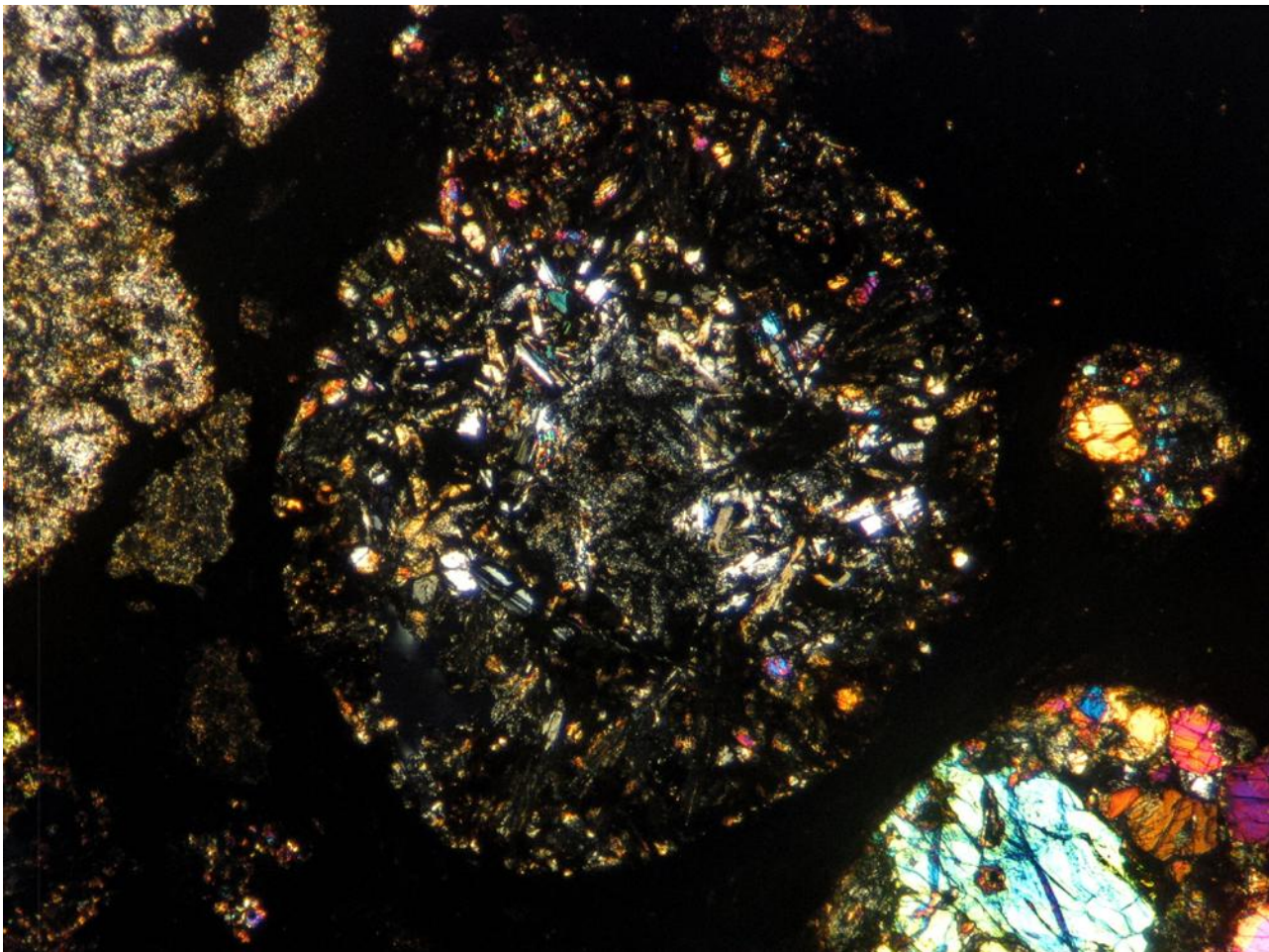
NWA 3118 CV3 - by John Kashuba

NWA 3118 is a reliably feature rich CV3. It is a pleasure to view in thin section because of its dark uncluttered matrix and large well defined chondrules, AOAs and CAIs.

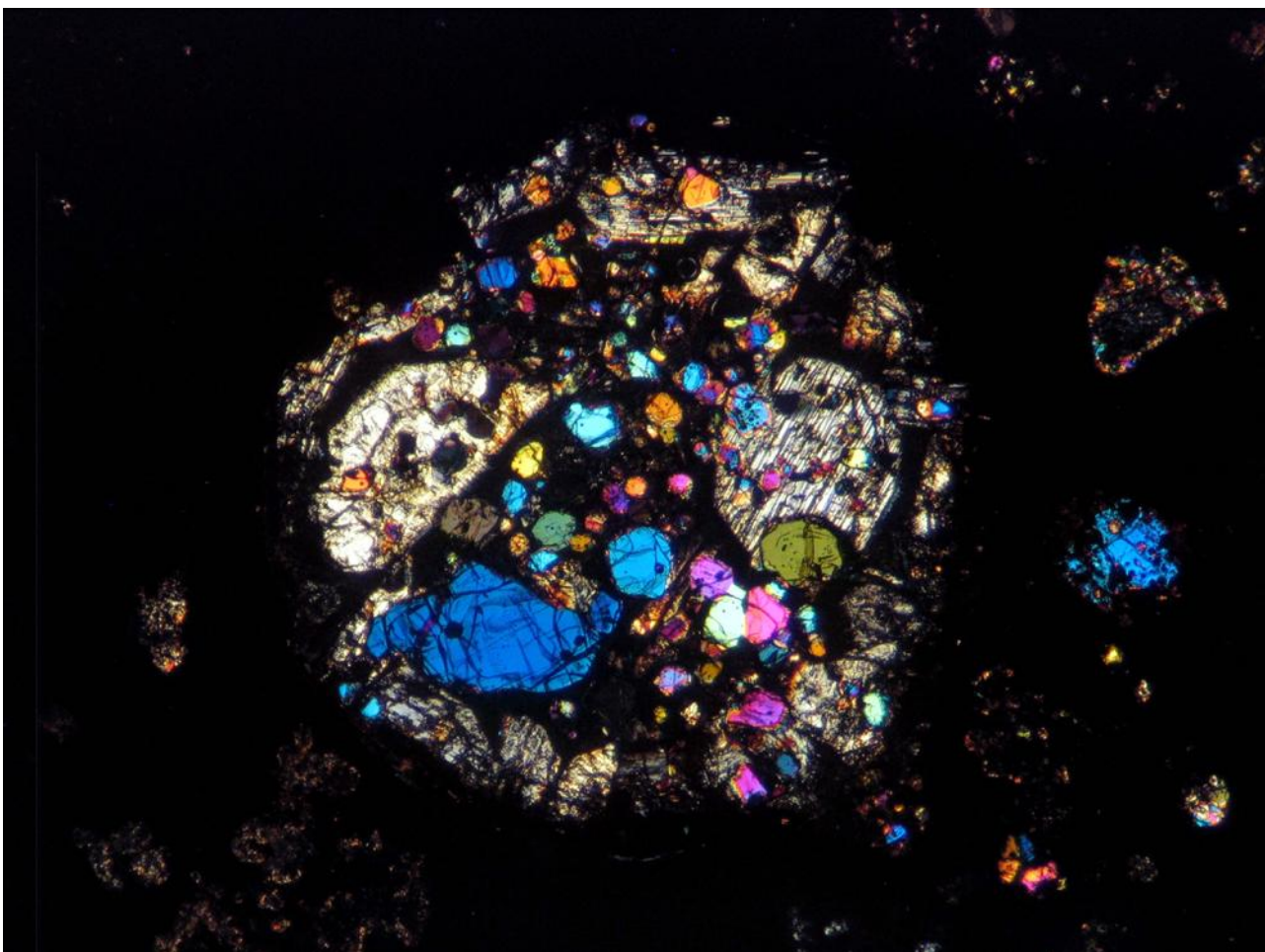
Here is a gallery from a single thin section. All photos taken in cross-polarized light.



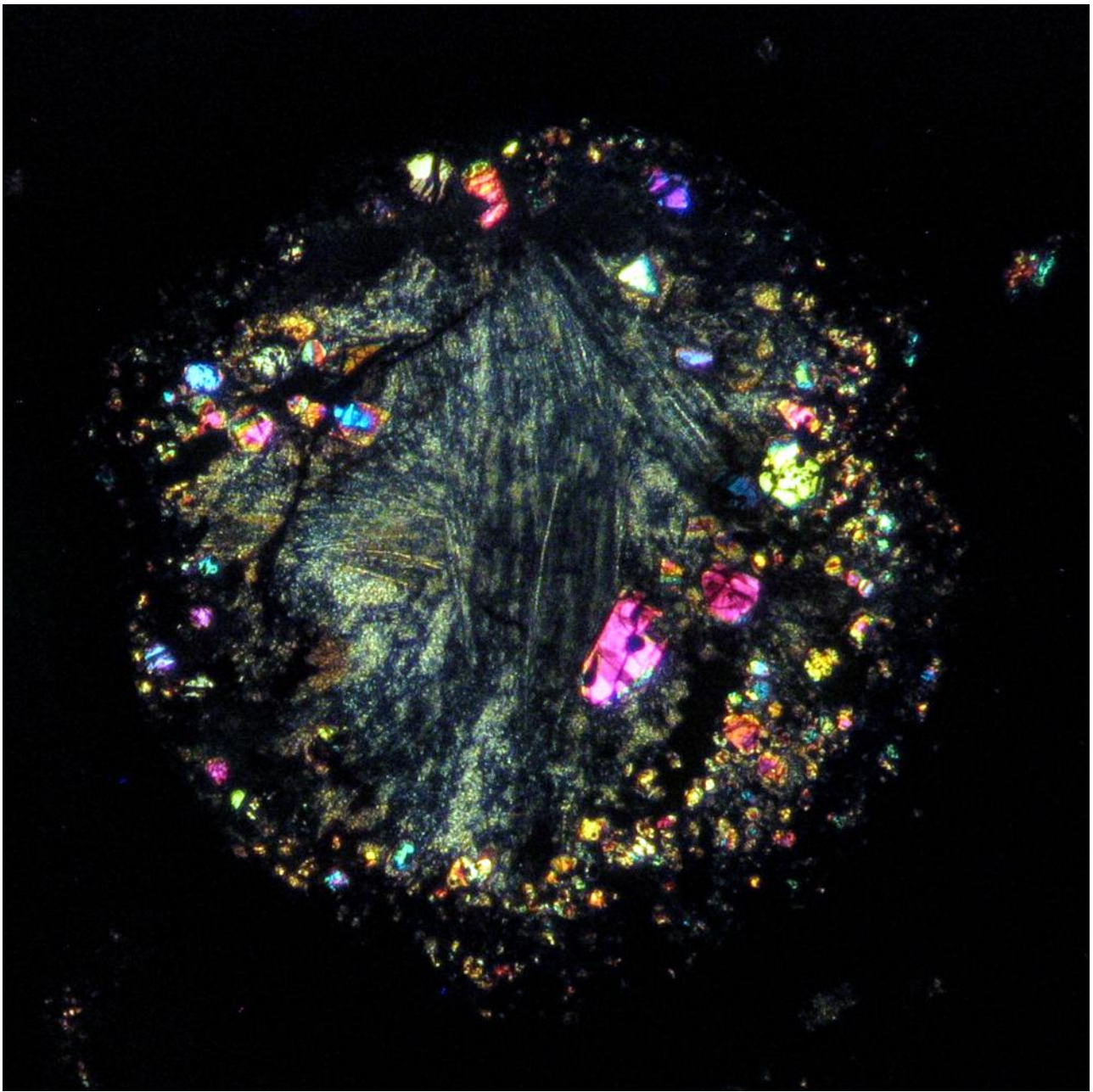
Field of view (FOV) is 3.1mm wide.



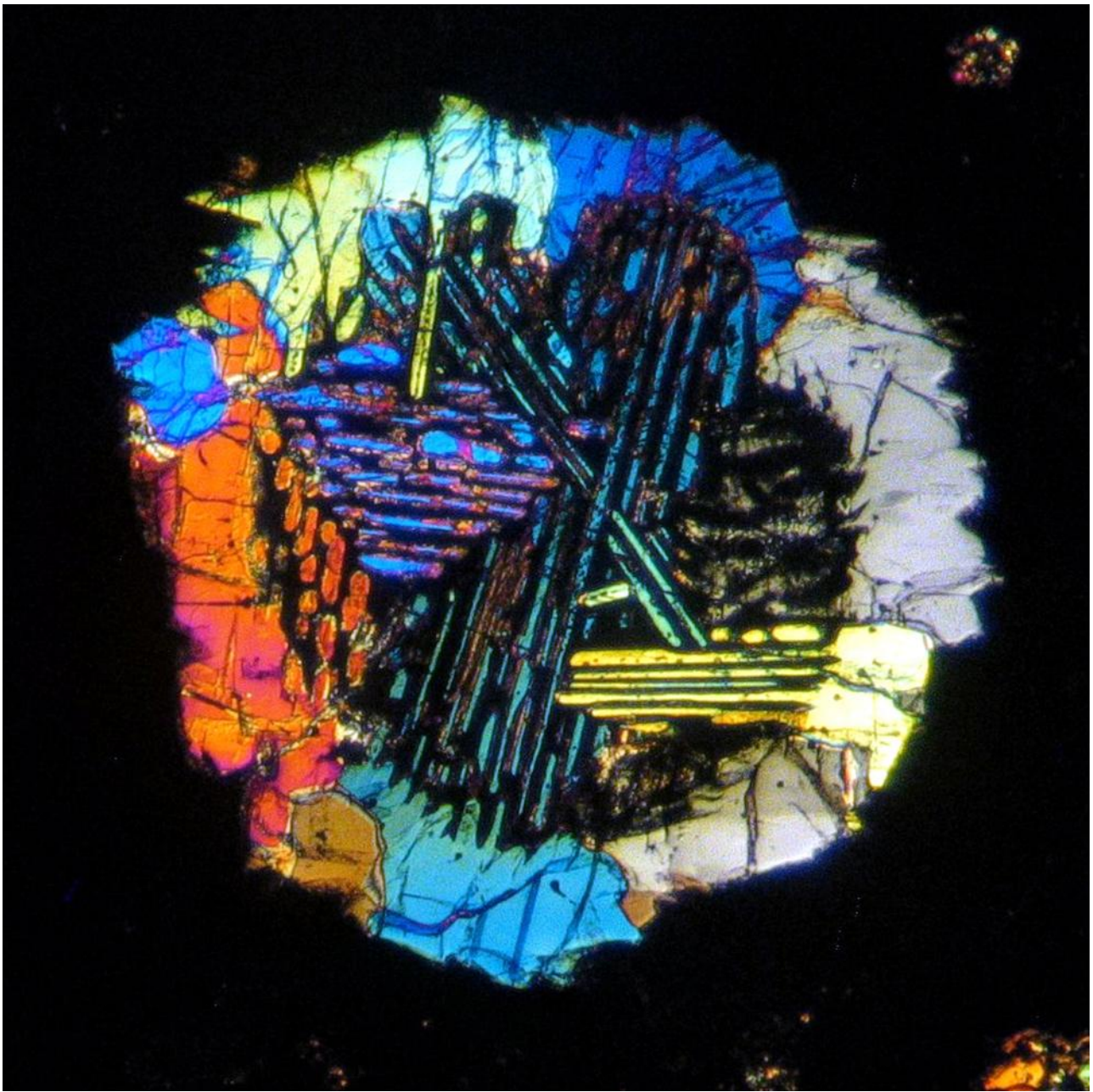
FOV=3.1mm wide.



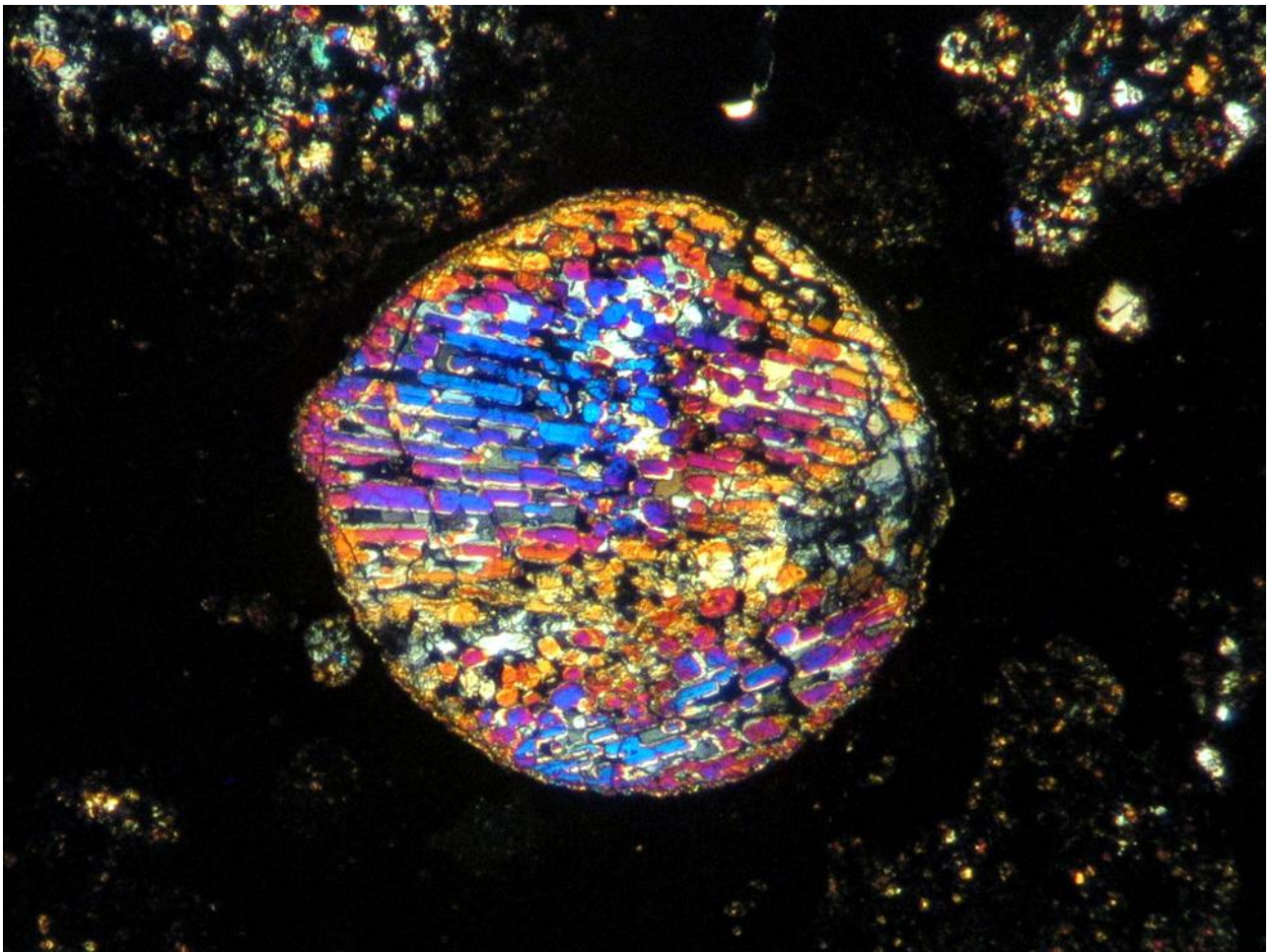
FOV=3.1mm wide.



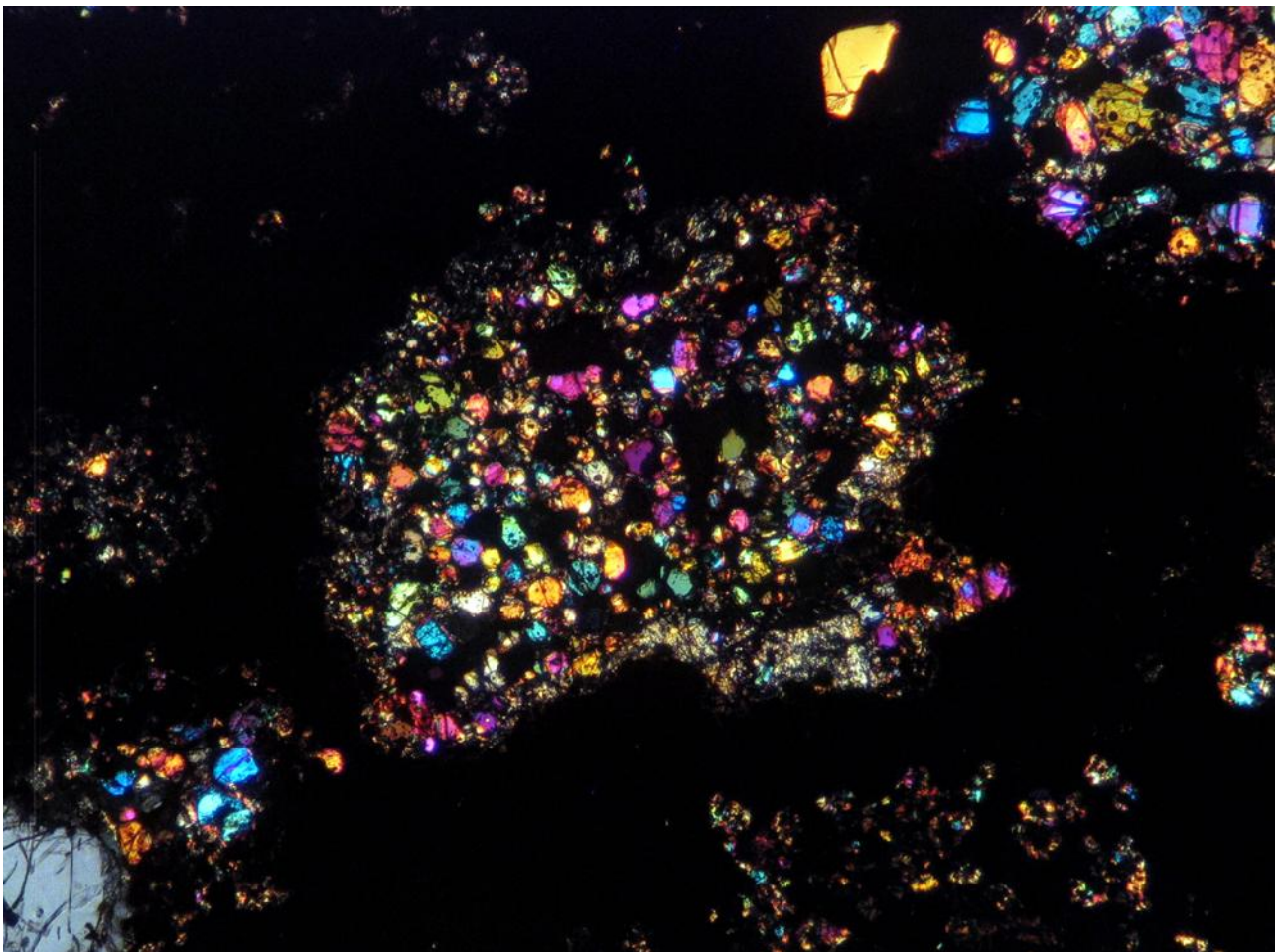
Chondrule is 1.3mm in diameter.



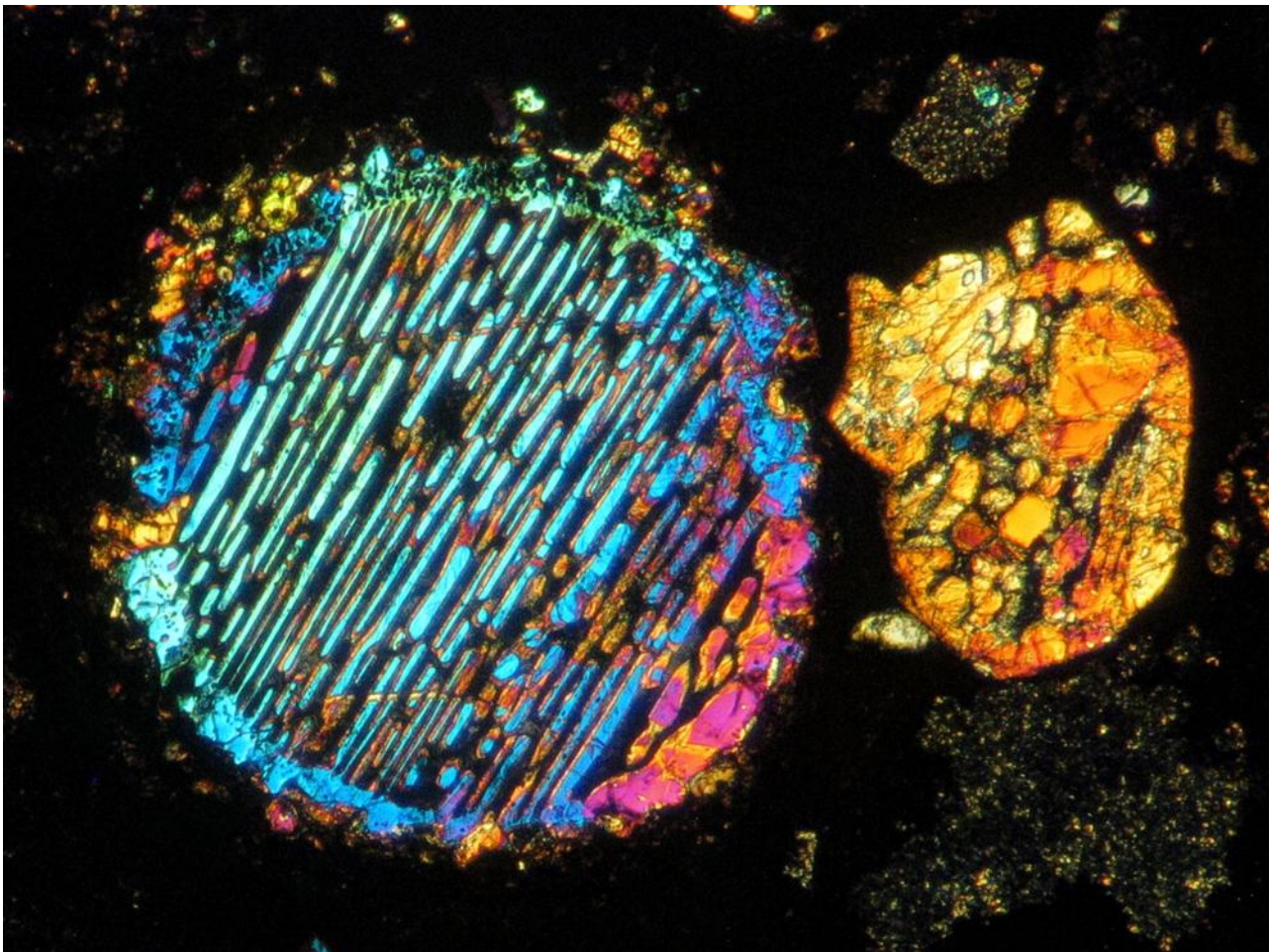
Chondrile is 1.1mm in diameter.



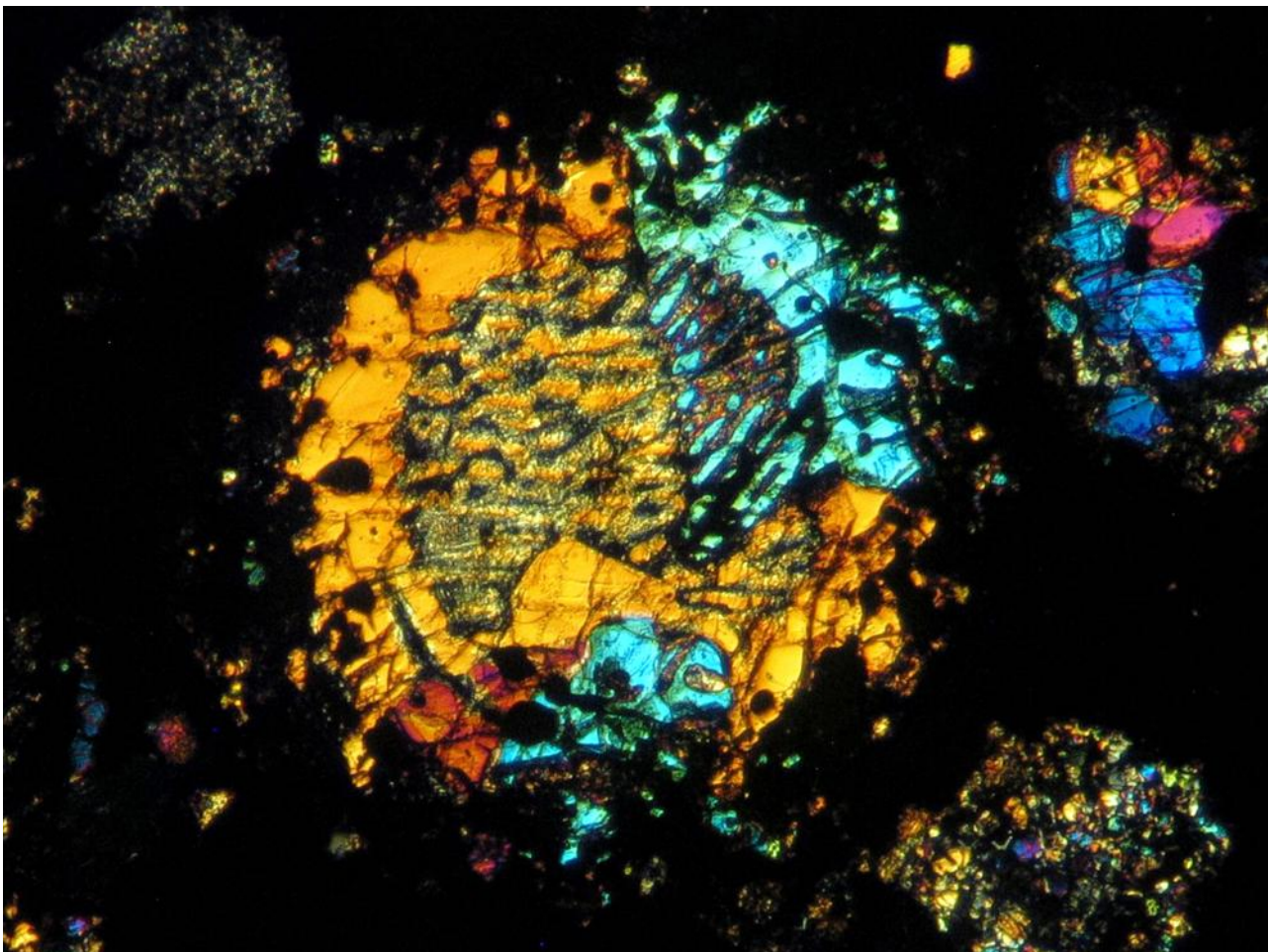
FOV=2mm wide.



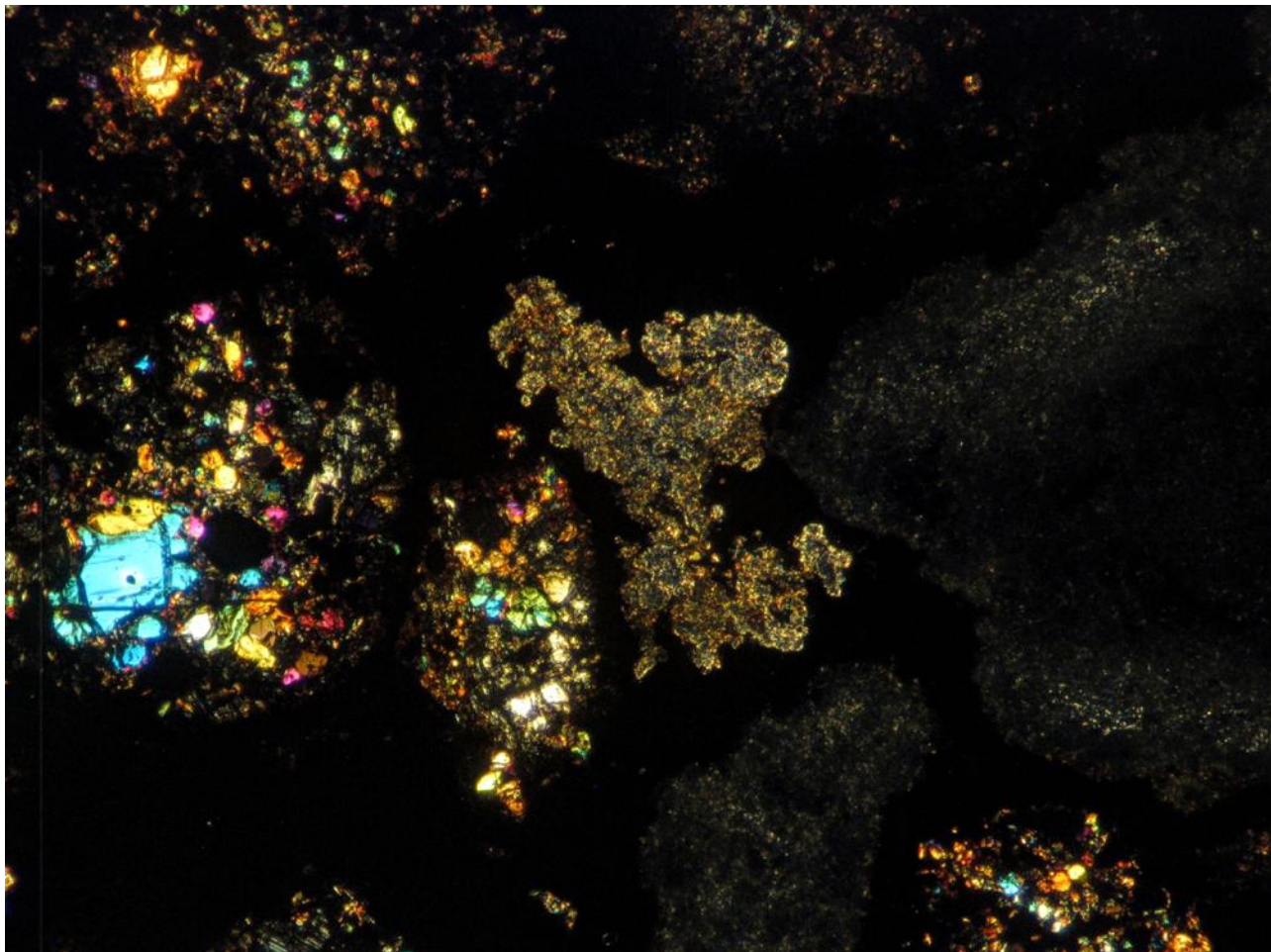
Amoeboid olivine aggregate. FOV=3.1mm wide.



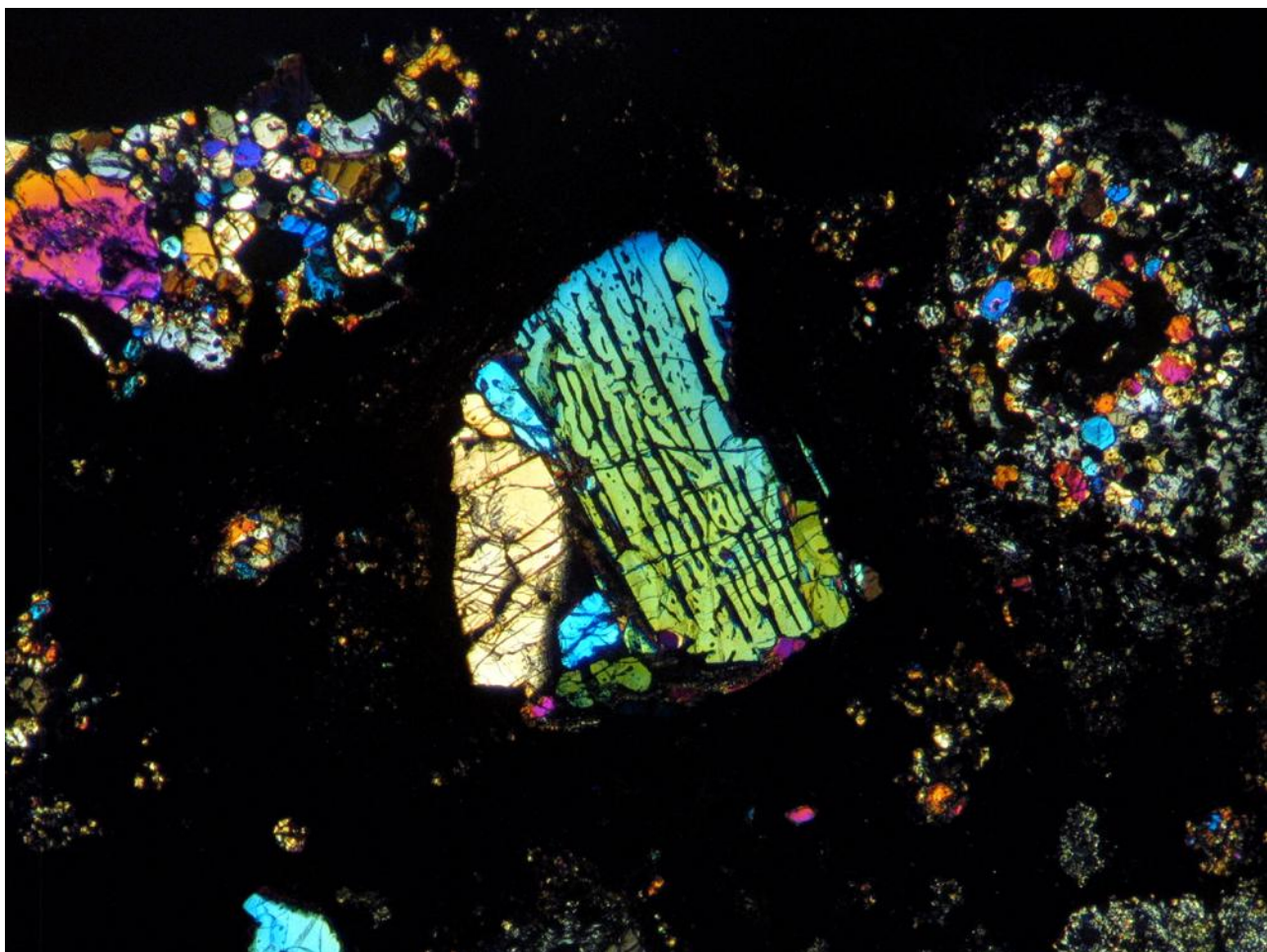
FOV=2mm wide.



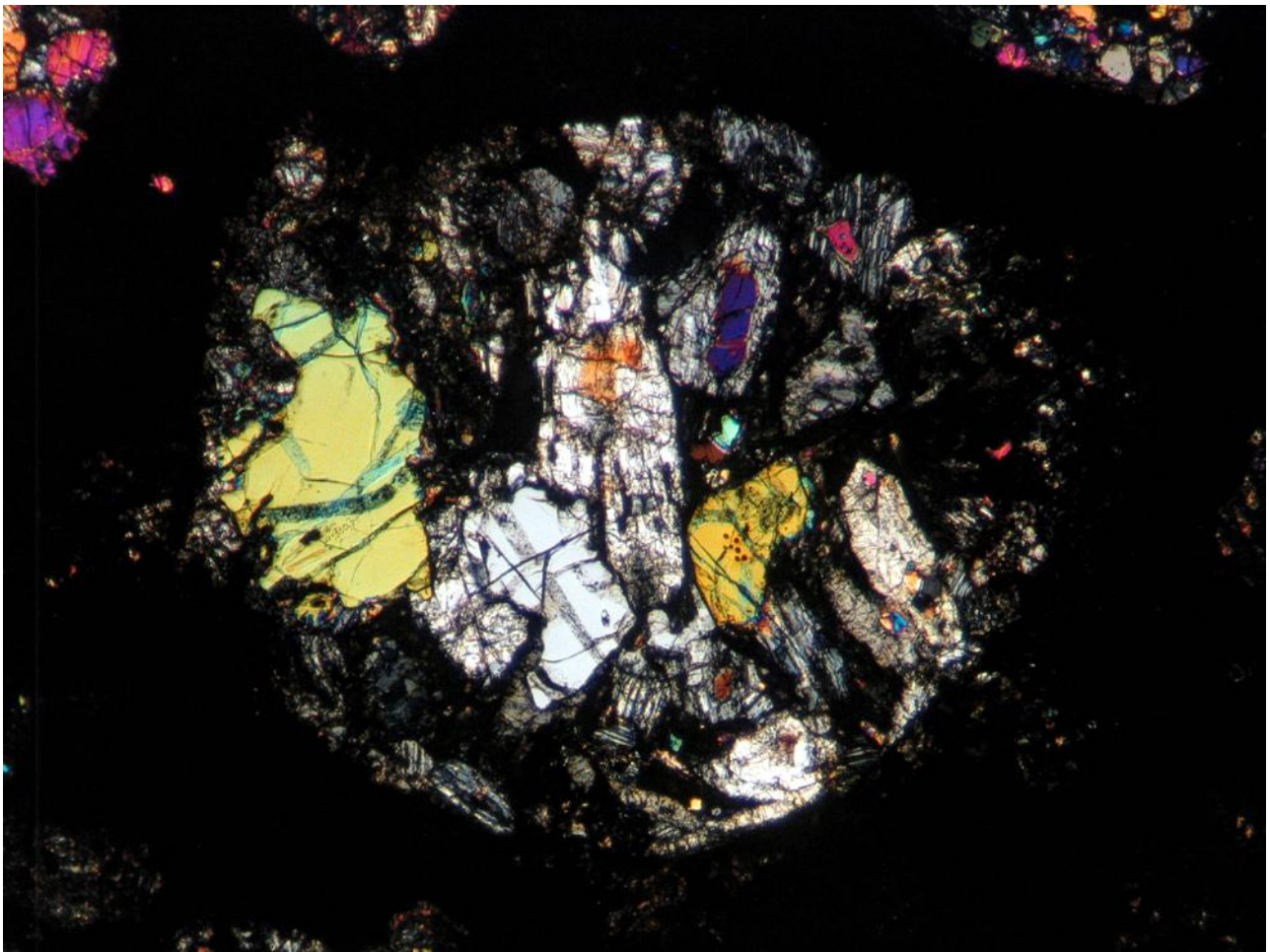
FOV=2mm wide.



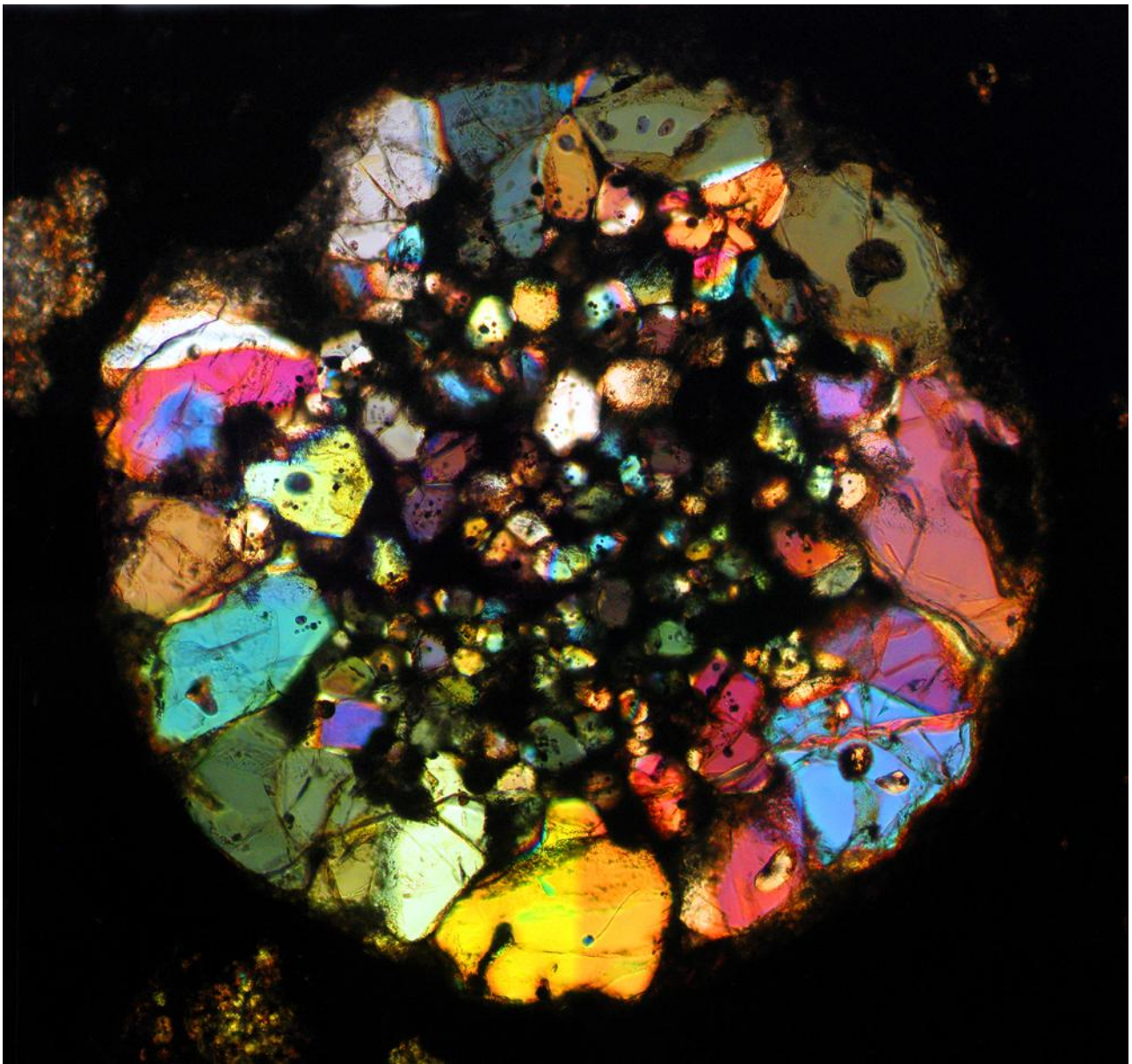
Calcium–aluminum-rich inclusion. FOV=3.1mm wide.



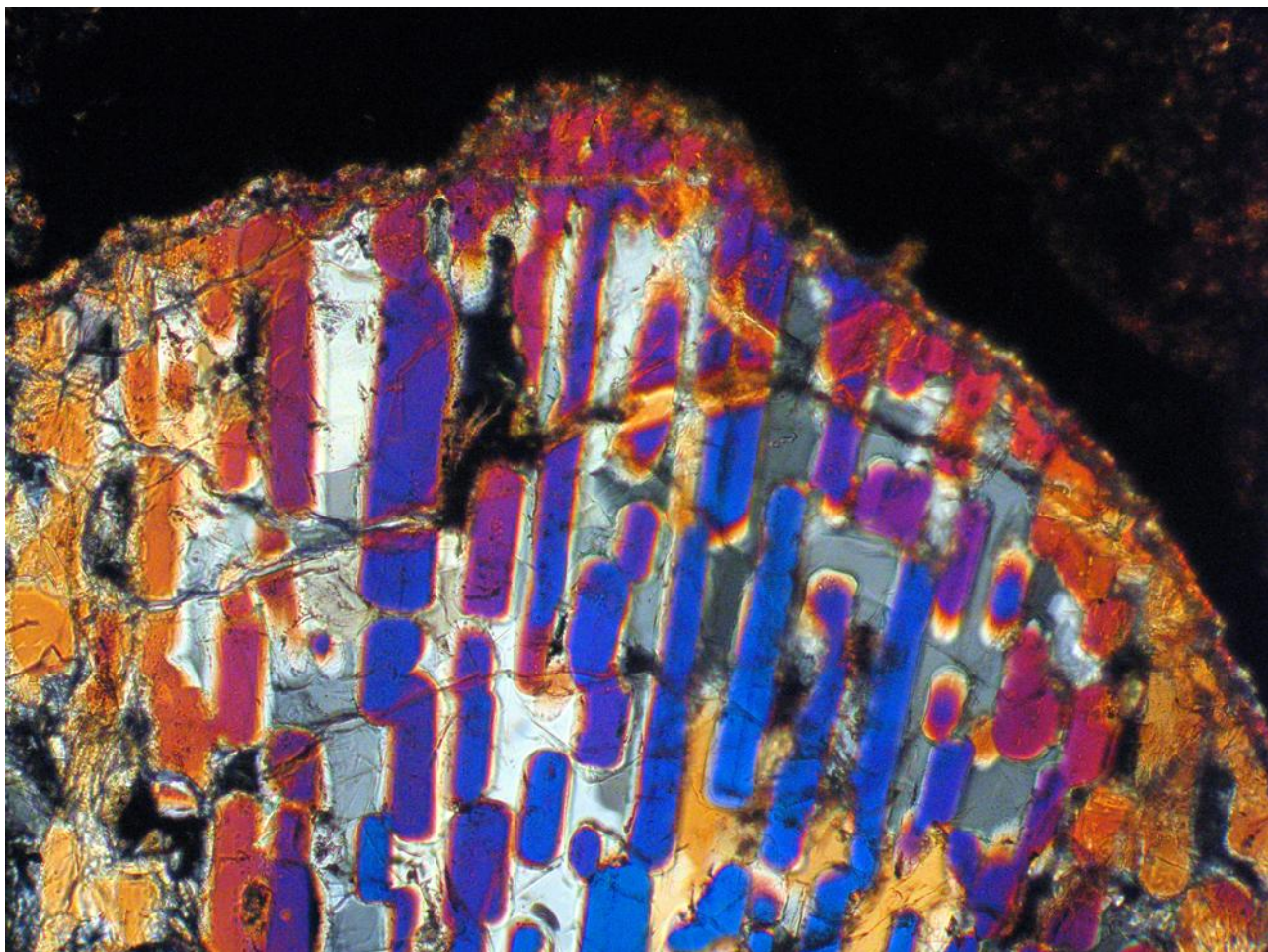
FOV=3.1mm wide.



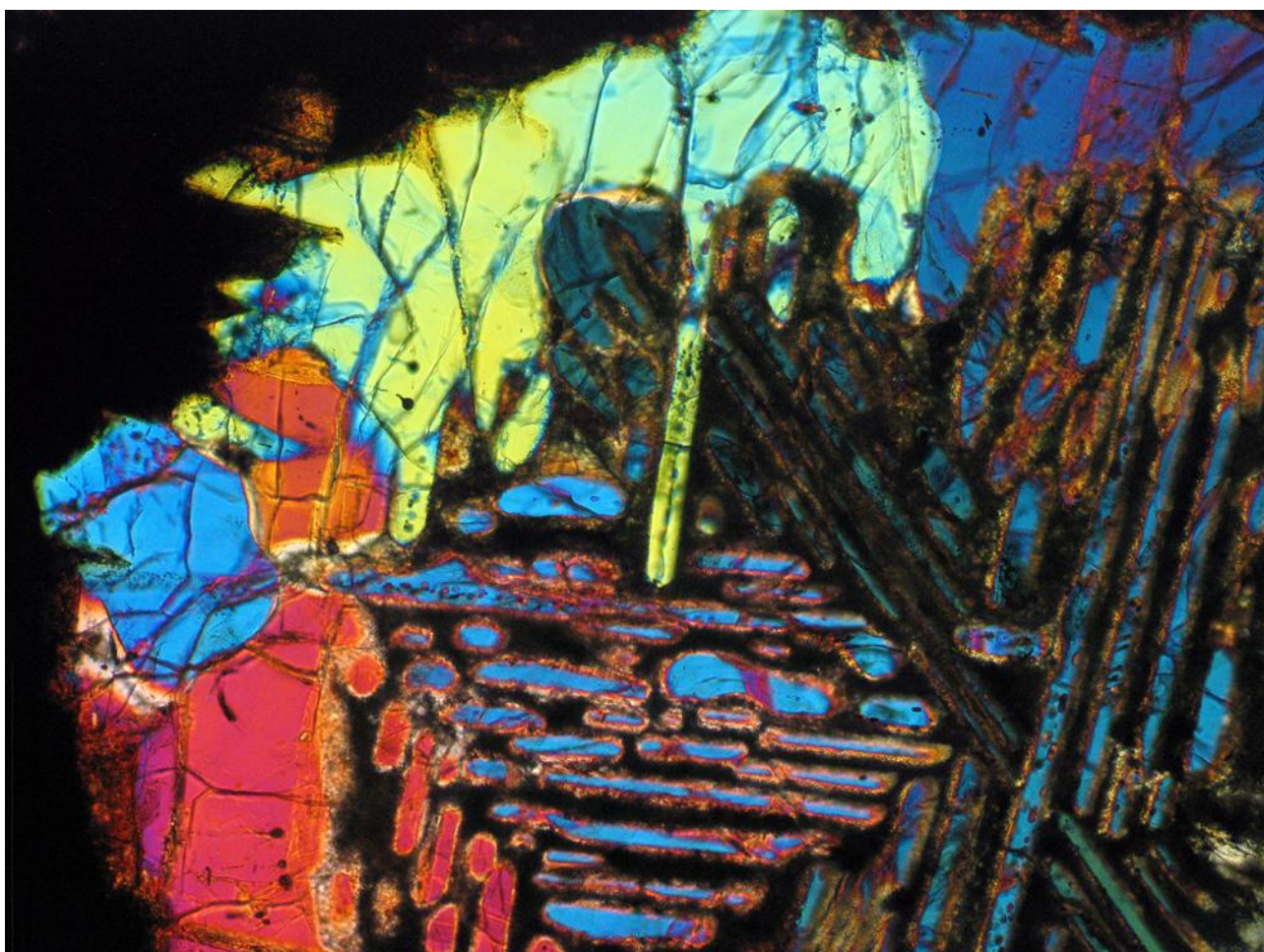
FOV=3.1mm wide.



Chondrile is 0.8mm in diameter.



FOV=0.6mm wide.



FOV=0.8mm wide.

Norm's Tektite Teasers: Are you sure Tektites are Meteorite Impact glasses?

By Norm Lehrman (www.TektiteSource.com)

(mybp or my: million years before present; ky: thousand years before present)

...And when your children shall ask "what meaneth these stones?" ye shall answer that this marks a place where the heavens touched the earth.



Touched indeed. With typical encounter velocities in the range of 15 to 25 km per second, an onrushing fragment of an iron asteroid is a freight train with a lot of kinetic energy. When it stops abruptly against an immovable object like planet earth, a great deal of that kinetic energy flashes instantaneously into thermal energy. Large volumes of target rock can be subjected to temperatures in excess of 2000 degrees C, well above the melting point for common earth

materials.

Depending on the specific character of the impactor (size, density, encounter speed) and the target rock, a range of impact products may form. At the lower threshold for significant glass formation, shattered target rock fragments in a glassy matrix form a crude paste hardly recognizable as glass (Monturaqui). At the other extreme, Libyan Desert glass is the highest purity natural glass known on earth.

"Impactite" is the broadest designation for anything and everything generated by hypervelocity impact events. It has been common usage to let the "impact glass" term be a general umbrella for all kinds of glassy impact products. Tektites are often viewed as a subset of impact glass, but I will here argue that there is a profound distinction between proximal (near) and distal (far) glasses, the tektites.

One of the great joys of a diverse collection of this sort arises when comparative sets are assembled. This is a fine example, inviting a reassessment of all we may have believed before seeing the bigger story.

In this image, the front row shows a selection of impact glasses found in either the immediate vicinity of an impact crater or thought to be proximal. The back row includes examples of all of the five generally accepted tektite strewn fields known. From left to right, I have selected a sampling of proximal glasses to show the range in character associated with a range of impact energies, and a corresponding increase in glass quality and fluidity.



Key to image:

1. Monturaqui, Chile. 0.46 km diameter crater. About 1mybp
2. Aouelloul, Mauritania. 0.4 km, 3.2my
3. Darwin, Tasmania, ~1km?, 780ky
4. Wabar, Saudi Arabia, cluster 0.1km, 10ky
5. Atacamaite, Chile. in study
6. Irghizite, Kazakhstan. 13.5 km, 1.2my
7. Libyan Desert glass, crater eroded away?, 28my
8. Moldavite Tektite, Central Europe, 24 km, 15my
9. N. American Tektite (Georgiite, Bediasite) 85km, 34my
10. Australasian Tektite, SE Asia, Australia, crater unknown, 780ky
11. Ivoirite Tektite, Côte d' Ivoire, 10.5km, 1.1my
12. Belize Tektite, Belize, crater uncertain, 780ky

Impact glasses (or their alteration products) are known from hundreds of sites spanning billions of years of earth history. In the world of significant impacts, proximal glasses (meaning those found within or very near an impact crater) are probably universal (as they should be given the energy releases involved in such events).

But strangely, we presently know of only five tektite (or four?, more to follow,) strewn fields on earth. Where we can associate an impact feature or source region with a tektite strewn field, they are separated by hundreds to thousands of kilometers. All accepted tektites show evidence of aerodynamic flight modification (excepting Muong Nongs of course. More on that below.) All impact glasses described in this article are found within or in the immediate vicinity of earth impact features (if the source is known).

Something is different. Tektites and proximal impact glasses are not on the same continuum.

The Key table for the image above offers some insights: in general, the tektite events are associated with impacts 1 to 2 orders of magnitude larger than the proximal glass events. Available data suggest that the Australasian, Darwin, and Belize strewn fields are about (and might well be precisely) coeval. There is a strong possibility that this event involved multiple near-simultaneous impacts, suggesting a Shoemaker-Levy-like train of bolides.



Muong Nong-type layered tektites appear to be formed of silica condensate beads mixed with variable proportions of local surface dust. Evidence suggests they formed as welded dunes in the immediate vicinity of overhead aerial burst fireballs. I know of examples from all but the Ivoirite strewnfields.

Faithful readers will recall that I channel the voice of Muong Nongs begging me to give credit to dozens of airburst fireballs in SE Asia, essentially one or more for every concentration of Muong Nongs. (Apologies to any who don't know what I am talking about. Please see the sidebar and check in the column archives. Muong Nongs hold the answer).

In the case of the Australasians, my whole story hinges on a friable, probably cometary, bolide that shattered high in the atmosphere, shot-gunning southeast Asia, and believably, sending a few big chunks hurtling to widely scattered destinations elsewhere on earth (Belize, Darwin).

If you will accept this argument, the number of recognized and distinct tektite-producing events is reduced to only four: the 34my Chesapeake Bay North American event, the 15 my Central European event, the 1.1my Ivoirite event, and the 780,000 year Australasian/Belize/Darwin event. (Do recall that glass is geologically unstable. After 40 or 50 my, glass will

be represented by alteration clays that may neither endure nor be recognized, so our deep time record of impact glass is limited).

I contend that **tektites** form when a structurally weak body explodes high in earth's sky and produces a mushrooming fireball that can blast into near space, perhaps even creating an evanescent hole in the atmosphere. Below, it vacuums the face of the earth with buzzing serpentine tornado fingers licking electrically, removing all surficial materials (the

recognized chemical stuff of tektites) and drawing them into the heart of the sun-like impact energy. Tektites took form suspended in such chaos. There is no requirement for a crater below.

Similarly, even those events with seemingly coeval source craters may well have had directly associated aerial bursts that were actually responsible for the tektites, not the craters per se. The craters we can see tell us something about a major bolide in the event, but it only hints at simultaneous atmospheric bursts that we imagine were probable or possible at that same time. Maybe the big ones of this sort arrive in clustered fragments. Some break up way high, others punch through to the ground. When an impactor strikes *earth*, we get impact glasses. When a structurally weaker bolide shatters high in the atmosphere, massive aerial bursts can result. Muong Nong-type tektites mark the locations of such *atmospheric impacts*. These are fundamentally different from earth impacts. Splashform tektites splashed only against the air. How they got where they went is a story for another time.

If you like the challenge of getting hold of a slippery eel or a greased pig, try tektites. Suppose everything I have surmised is correct (a virtual Copernican revolution in itself) and we now have uncontroversial oscillating blobs of tektite glass flinging through the turbulence of an unthinkable explosion of aerial-burst energy, ---supposing that is all correct, it is not over. We still need to get these tektites a 2000 km ride to shower farther down range than an atom bomb could ballistically propel a pea! Maybe a subject for next time. This is the fun of tektites. I seem to move forward, but I find no end.

(If you will review the archives of this column, you will find more detailed descriptions of each of the dozen impact glasses and tektites mentioned in this article. More discussion regarding the sanctity of Muong Nong-type tektites awaits the scholar there as well.)

Meteorite Times Magazine

THE FIRE OF THE NATIONAL MUSEUM OF RIO DE JANEIRO

Anne Black

During the recent Tucson Show I had the pleasure of a visit by Mary-Elizabeth Zucolotto, curator of the meteorite collection of the Museum of Rio. We had a long chat about the recent fire of the museum and its aftermath; she showed me many pictures on her cell phone, told me about all the efforts to recover so many artifacts lost in the fire. It was all so interesting and amazing that I asked her to put all that in writing, with all her pictures, as soon as she was back in Rio. And she did! And here it is in her own words.

Anne M. Black

On Sunday, September 2, 2018, around 8 pm, the neighbor called to inform me that the National Museum of Rio de Janeiro (MN / UFRJ) was on fire. I turned on the television and while my sons cried for the loss of the mummies, I made the decision to go there, even against their will, as they were afraid that I would die playing the heroin. I left in a hurry without taking anything, just a little water in my backpack. I did not bring a flashlight or a cellphone charger, which would be much needed later at the scene of the incident.

Despite many difficulties, discussions with the police and threats of evictions, I and a group of colleagues, with great effort, managed to get close to the Palace and realized the total lack of organization from the firemen against the fire. The hydrants were without water, the firemen without action and the fire trucks seemed like toys compared to the size of the Palace.



Around 10 pm, we were already a staff and starting to organize. I went to the back side of the museum and realized that the fire was already out of control, reaching the third floor of the back of the Palace, where most of the collections were. So, I felt that now was our last chance to act!



I ran back to the front of the Palace and was able to speak with the firemen chief, who finally authorized and provided help to enter through the outside door of the Chemistry Laboratory, allowing access to our rooms and collections. I had to show how to open the door, almost impossible to break into, and although I was the first to enter the laboratory, I could not enter the building, because the firemen asked me to wait.

Soon after, a group of about ten finally entered, but I was already involved in coordinating the withdrawal of a non-scientific collection, which is used for school loans and which was in pots with alcohol less than 2m from the Palace. I made this decision because it was very important to prevent the fire from spreading to the annex.

I was helping, but at the same time waiting for a chance to enter my room and save at least the meteorite Angra dos Reis (but how to find the key of the vault drawer in the dark?). At the same time I remembered that, on the upper, and wooden, floors, there were many heavy iron cabinets and everything could fall on top of me because the fire was already there. On the other hand, I was sure that by the next day most of the meteorites would survive and be in the same place.

In a very short time, we heard crackling. Everyone left the Palace in a hurry, except Sergio, the husband of the deputy director, Cristiana Serejo, who, without noticing the danger, entered once again in my room from which he had already saved my MAC computer. Moments later he came out proudly carrying in his arms the puppets of the films "E.T. – The Extraterrestrial" and "Mars Attacks!" Then, everything began to collapse just as we had anticipated.

Everyone was deeply shocked because the time we had to act was so very short, making it possible to save only what we could see in front of us. The employee Claudio was the greatest hero – he managed to save the collection of holotypes from the Malacology Department.

A question arose: If the firemen could not control the fire, why did they stop us from entering the building when the fire had not spread yet to these areas? If we had entered when we arrived, about 08:30 pm, we would have had at least 2 hours to save the collections safely. When we were finally allowed to enter, it was too late and it was a miracle no one was injured.

Around 11:00 pm, the Meteoritic team (Amanda, Diana and Sarah with their respective spouses) had finally managed to get close to the Palace. It was too late and we could do nothing else, so we went to the back of the building to watch desolate and revolted our collections succumb to the flames. There was no media there and no firefighter who could at least try to do something, even if just check if the hydrant on that side had water. My revolt was such that Amanda decided to record a video.



I went back to my house at about 3 o'clock in the morning. I cannot say that I slept because I only had short spells of sleep and nightmares because of the anger at not having been able to do what I thought was right. I could have gone better prepared, or gone straight to the back, scaled the wall and saved the collection, but I was not properly equipped and I was afraid to die in the burning debris.

Monday, September 3, I woke up early with the news reporting that the Bendegó meteorite had survived intact as a phoenix, rising in the midst of ashes in the museum entrance hall. The chief of security assured me that no one would be allowed to enter the hall of the Meteorite Exhibition but, after several arguments, I did convince him to get a permit from the fire chief for me so I could access it.

While everybody stayed behind the security barrier being interviewed and assessing guilt, I went to rescue the meteorites that were in the exhibition inaugurated by Dr. Klaus Keil, exactly 3 years earlier (photos), according to Facebook's memories. I rescued 24 of the 36 meteorites that were exposed, but four of them I had no way to remove and I could not locate some small ones in the rush. As the plaster of the ceiling was falling, I stayed only a few minutes inside the building and the fireman would not let me to stay any longer. This scene was filmed in the news and repeated several times.



I, inside the museum looking for the meteorites on the day after the fire.



I, getting out the building with some meteorites

I tried to enter my office, where the collection was located, but the path was completely obstructed by twisted iron cabinets, which had fallen from the upper floors, and debris from the collapsed roof. There were still plenty of smoke and hot spots and I was wearing sneakers with rubber soles.



During the afternoon, some officials were already authorized to try to rescue anything from the aftermath of the fire, especially some minerals and frescoes. A firefighter led by the former director burned his hands to save a supposedly skull of Luzia (the fossil of the oldest human being in the Americas and that was now blackened).

On Tuesday, September 4, as numerous “unknown” people appeared and a bunch of opportunists tried to grab whatever remained in the National Museum, the Federal Police forbade the entrance into the building until the investigation of the cause of the fire was concluded.

Amanda, my doctoral student and microprobe operator, remembered then that there were many meteorites and thin sections stored in the LABSONDA (Electron Microprobe and Microscopy Laboratory at UFRJ). So we were comforted to know that our research had helped to save much material, including some bibliographies.

In the following days, the Museum director, Alexander Kellner, was able to release an emergency grant to hire a firm (Concrejato) that would anchor the Palace’s walls and lay a roof, within six months.

They appointed a Rescue Committee with some museum staff, led by the former director, in order to be able to act without the intervention of UNESCO. Although I was the first to begin the rescue, I was not accepted into the “highly qualified” group for various motives (lack of ability, possibility of accident, or other reasons not justifiable, in fact). Unlike others that were excluded, I continued to frequent the Palace annex. Sometimes I was asked to solve problems like neutralizing acids in the laboratory.

The media wanted to know about Angra dos Reis (angrite meteorite). Almost seven weeks later, on October 18, I received the news I could finally enter my room, coincidentally on this day the former director would be busy at a press conference because she had finally rescued the real Luzia.



The way to my room was still full of iron cabinets and rubble. I asked Concrejato's staff for help and we quickly cleared the way in a task force. The Rescue Committee of the Paleobotany Department and Luciana Witovisk helped me recover the meteorite and they documented the rescue.





The cabinet with 2 drawers, where the Angra was. Note that there was no microscope anymore.



The meteorite was in great condition, lying in the drawer with other meteorites seized in a Federal Police operation years ago. There were two cameras intact in the same drawer, indicating that the drawer was well insulated from the fire that had destroyed the rest of the office.



I did not show great happiness in finding Angra dos Reis possibly because I knew it was there or because of the sadness at seeing for the first time all the destruction in my office and that the wood cabinet in which most of the collection had been stored no longer existed (Three years earlier, I had won a grant to buy good cabinets for the collection, but these funds never arrived).



In the following days, I continued to remove the rubble by myself (students and colleagues were not allowed to enter the building). I managed to recover most of the whole collection except the very small samples of 2 grams or less. Even using fine sieves, famous meteorites like Kapoeta, Chassigny and others were not recovered. Among them, the biggest losses were the Ibitira and Governador Valadares meteorites.



The specimens were recovered in many different shapes and conditions. Some were almost intact while

others, unrecognizable. The Krasnojarsk (Pallas Iron) meteorite was almost discarded as rubble. It looked like iron foam embedded in a cemented material. While many other meteorites were embedded in molten glass.



We are still conducting a survey of the meteorites so we can later identify and restore those found as well as assess the damage they have suffered from the heat. In these stages, where there is no longer need to enter the ruins of the Palace, I have the help of the students Felipe A. Monteiro and Filipe de Oliveira, who's doctoral and master's projects, respectively, will deal with this theme.

In the fifth month since the fire, with the building almost clean, the press was allowed to enter the Palace in shirt sleeve.

I came back from vacation after this and, before writing this text, I restored the Santa Luzia meteorite, the second largest Brazilian meteorite with 1.89 tons, for an exhibition on the progress of the rescue work in the National Museum, which is taking place at CCBB Rio.



The Santa Luzia at the exhibition and my two doctorate students Felipe A. Monteiro and Amanda Tosi who helped me with the text

The destruction happened 200 years after the completion of the National Museum. It was not only the oldest scientific institution in Brazil, but it housed one of the main scientific collections of the Americas,

comparable to the Smithsonian Museum. It is an irreparable loss, not only to the Museum, but to all mankind. More than 20 million items were destroyed by the fire, including impressive collections items such as Egyptian and Greco-Roman artefacts, the sarcophagus of Sha-Amun-em-su, that had never been opened, fossils, historical documents, and anthropological treasures. Fortunately, a lot of archives and collections were stored in another building.

Now, six months after the tragedy, there is still no answer as to what caused it, or even any clue as to where the fire started and whether it was accidental or criminal, only a true Sherlock Holmes could solve that case.

Any place is likely to catch fire, but completely succumbing to it is unforgivable. We can enumerate several problems: former directors had little ability to obtain administrative funds; public negligence; lack of financial resources. Since the palace is a heritage listed building, it is prevented from performing security modifications, such as emergency exits and sprinkler installation.

The lack of preparation from the firefighters and the diversion of water from the public water company on the day of the fire, besides the lack of organization and training of the public forces for an emergency of this level, led to this immeasurable tragedy that caused the loss of our national and international patrimony.

Mary-Elizabeth Zucolotto.

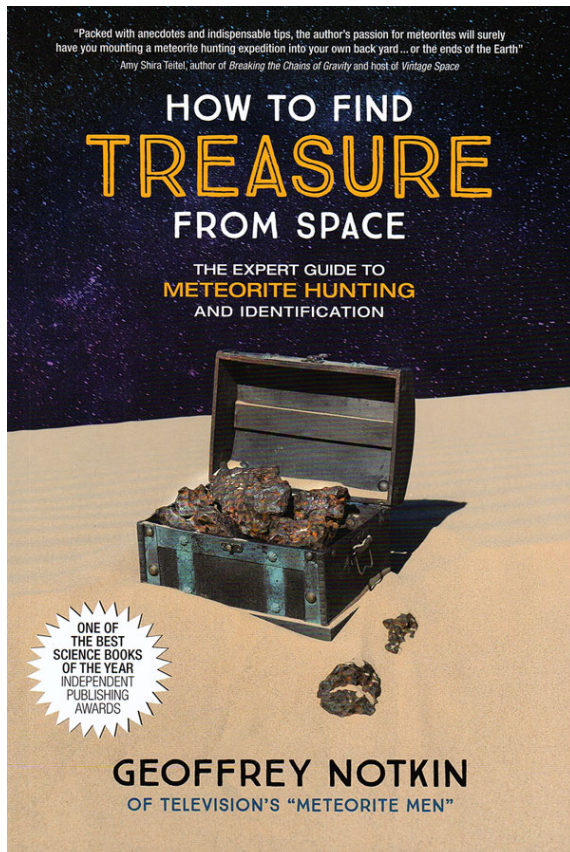
All pictures provided by and property of M-E Zucolotto.

Meteorite Times Magazine

Book Review: How To Find Treasure From Space

James Tobin

How To books can be similar to the instructions that come with furniture requiring assembly. Something written by an engineer who has never actually spread the parts out on a family room floor and attempted to put the thing together. That is not the case with “How to Find Treasure from Space” by Geoffrey Notkin. Geoff is not just a meteorite hunter, Geoff is a meteorite finder and he has found meteorites in almost every environment on Earth from forests and mountains to flat farmland to blazing hot deserts. If you want to learn something difficult to do it is always better to receive your education from someone who has vast experience and a record of success. If you can find someone who wants to share their wisdom with excitement and fantastic stories that’s even better. All of that and more is what the seeker of knowledge about meteorite hunting will receive in “How To Find Treasure From Space.”



[Click Book to Order](#)

Over the last few years, I have read dozens of comments online from individuals that have “to find a meteorite” on their bucket list. Sometimes the person will say, “I have been hunting for years and not found one yet.” Meteorites are rare and they often hide very well. Geoff Notkin has learned how to find these elusive objects regardless of how well they conceal themselves. He has learned their habits and knows his quarry intimately. He offers this knowledge and wisdom in a book overflowing with beautiful photographs from his many journeys. He tells the reader everything they need to know. He begins with a detailed introduction to all the types of meteorites. The tools, methods, and safety are all covered along with the practical side of doing it correctly to get the most return for the investment of time and money.

HOW TO FIND TREASURE FROM SPACE

The definitive adventure guide to locating and recovering meteorites, written by one of the best-known personalities in the field, the charismatic Emmy-winning host of television's *Meteorite Men*. It includes nuts-and-bolts specifics on how to search for, identify, and excavate rocks from space, and is filled with original photographs, illustrations, and insider information from an internationally recognized expert on an extraordinary — and otherworldly — subject.

"This book is a rewarding read. It has science, humor, and beauty, resulting in great awe of the solar system."

DR. ARTHUR J. EHLMANN

Emeritus Curator
Oscar E. Munnig Meteorite Collection, TCU

"If you're interested in learning about meteorites, it makes sense to go to the master—a seasoned field geologist, television personality, and a guy who has built a small empire finding and marketing not just meteorites, but the adventure of finding them. Geoffrey Notkin, who, besides his other tireless endeavors, finds time to serve on the Board of Governors of the National Space Society, writes this handbook to that adventure in a witty and engaging style, sharing the excitement and passions that he experiences in his trade. The best part? You can do it too, and this book will tell you how, and more importantly why you'd want to. And while you may strike it rich, that's not really the point.... it's about living a passionate life, as Notkin has; an experience he relays in an engaging and approachable fashion."

ROD PYLE

Noted author of 15 books on space and science
Editor in Chief of *Ad Astra* magazine for the National Space Society

"In 1997, on our first expedition to Chile's Atacama Desert, I learned that Geoff was a natural at meteorite hunting. It wasn't until later, however, when he wrote an amazing account of that excursion in a magazine article, that I also began to appreciate his literary skills. If you enjoyed Geoff on *Meteorite Men*, you are going to love this book. No commercials, no meteorwrongs, no me interrupting him with offers of beef jerky—just Geoff waxing eloquent about these remarkable treasures from space. It doesn't get any better than this!"

STEVE ARNOLD

Professional meteorite hunter and co-host of *Meteorite Men*



stanegatepress.com

While it is true that this book is titled the same as a version he produced a number of years ago. It is a totally updated rewrite with much more information, tips and photography. The equipment and tools have improved and Geoff's skills have sharpened as well and he has new stories to tell. It takes work and time to find meteorites but if you go prepared by reading "How To Find Treasure From Space" you will get off with a great start.

Meteorite Times Magazine

Allende

Paul Harris

Our Meteorite of the Month is kindly provided by Tucson Meteorites who hosts [The Meteorite Picture of the Day](#).



Photo Copyright (c) Dieter Heinlein

TKW 2 tons. Observed fall 8 February 1969, at the village of Pueblito de Allende, Chihuahua, Mexico. Contributed by Dieter Heinlein, IMCA 0117

Meteorite Times Magazine

Meteorite-Times Sponsors

Paul Harris

Please support Meteorite-Times by visiting our sponsors websites. Click the bottom of the banners to open their website in a new tab / window.



Nakhla Dog Meteorites



Michael Blood Meteorites



The Meteorite Exchange, Inc.



Impactika



Rocks From Heaven



Aerolite Meteorites



Sikhote-Alin Meteorites



Michael Farmer



Schoolers



Nevada Meteorites




Tucson Meteorites



MSG Meteorites



Cosmic Connection Meteorites



*Once a few decades ago this opening
was a framed window in the wall
of H. H. Nininger's Home and
Museum building. From this
window he must have many times
pondered the mysteries of
Meteor Crater seen in the distance.*

Photo by © 2010 James Tobin