United States Faceters Guild Newsletter

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President's Message

Hello everyone. I have just recently retuned from our 2025 Franklin Faceting Symposium in Franklin North Carolina. It was absolutely the biggest and best Franklin Event we have ever had. There are not enough words for me to express my heartfelt thanks to the events work group for pulling this off. Not only were there interesting and meaningfull presentations, there were also plenty of opportunities to get you hands on a faceting machine and learn. And yes, we did raffle off an Ultratec V5 faceting machine which was huge and clearly one of the great highlights of the event. Our winner, Jenny Roseboom is relatively new to faceting, but has a history of looking for gem rough material in the mountains of North Carolina. A teacher by trade, Jenny signed up for our faceting class, but needed a machine. Tom graciously let her borrow one of his. It is so ironic that Jenny ended up being the lucky winner of the drawing. Congratulatons Jenny! I do want to extend an invitation to each of you to our next Sympoisum, which will be on February 5-7 2026 in Tucson, AZ at the Old Pueblo Lapidary Club. It also promises to be unique and exciting, and you won't want to miss it. More details will be released as they are firmed up so stay tuned to our Facebook site for the most recent information as it becomes available.

Our success at the USFG greatly dependends on you, the members. We are always looking for those that want to participate and assist with our various events and work groups, and I would ask that you reach out to me or any of our board members with your interest to participate and help. We will be happy to put you in touch with the right work group based upon your interests.

Our goal is for you is to become the best faceter possible. May all of your meetpoints meet and may all of your facet surfaces be succesfully highly polished. I hope to see you out there.

– Doug Augspurger, USFG President

Editorial Board:

- Michael Holmes (Editor)
- Doug Augspurger
- Cari' Fifield
- Mark Oros
- Dan Lynch
- Steve Miles
- Maggie Klinedinst
- Barb Yost

Welcome Members

We are delighted to welcome the following new members and warmly welcome back our renewing members! We're thrilled that you've chosen to join or continue with our community!

Albert Abdool ..... NC, US
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Ken Williams ..... CA, US
AiLien WU ..... TW
David Yturralde ..... CA, US

2025 USFG Franklin NC Symposium

By Cari' Fifield

The 2025 USFG Franklyn Symposium in North Carolina was held July 24–26 at The Factory. It was a fun and educational experience with many new activities and events. We are excited to share a report of the wonderful experience in our newsletter.

Some of the fun comments about the symposium: (What did you love?)

"Getting the chance to meet experienced faceters and get advice."

"Loved the knowledge sharing and learning also with the vendors that shared knowledge."

"I really enjoyed the talks. There was something interesting in every talk even if I didn't think that I was going to be interested in that individual subject. "

"I LOVED IT ALL. The Symposium Exceeded my Expectations. The variety of Topics made everyone Happy. The TREATS were appreciated by ALL."

This year the Franklin Symposium offered three classes and hands-on learning activity:

- Tom Mitchell's 2-Day Faceting class was a delight to attendees. Reports came back that he is masterful and patient in his teaching. Participants completed at least one gem during the class time and left with significant skills to continue their Faceting journey.
- Michael Holmes and Roger Dery ran a Speed and Processing part day class. This was a new venture for the symposium and it was a highly successful class with positive comments from attendees.
- Judy Mitchell taught a class for gemstone and jewelry photography. Her participants had the opportunity to try hands on photo taking and collaboratively worked to improve their skills and support each other. This was a fun class for participants who reported enjoying their learning experience.
- Larry Mattos had two sessions (repeated) to let individuals learn and try some hands-on fantasy cutting. Participants walked away with tangible practice and knowledge of the process and equipment used in the fantasy cutting process.

Franklin had a broad variety of presentations. The presenters were amazing and generous with their knowledge.

- Dan Lynch Received the USFG Recognition Award for his many years of service and contributions to the faceting community.
- We heard from Doug Augspurger as the president of the USFG in a general welcome session. He also had

a presentation “A Conversation about Meet Points and Competition Polish”. In this presentation he opened dialogue to understand the differences between precision cutting and competition cutting. He shared his own journey as he has participated in the USFG Single Stone Competition and how he has used the judge’s feedback to learn and improve. He shared about his successes and times he wasn’t successful. Participants could ask questions and share their experiences and thoughts.

- John Campbell presented about “Metal and Copper Laps”, how to use them and why they are helpful. He discussed ways to get copper laps and possibly make your own copper laps. John had a second presentation on “Intermediate Gem Cut Studio”. He shared how to import gem designs and make a variety of changes with the software to enhance the gem or modify the gem.
- Carl Eleazar and John Campbell presented together about “Faceting Laps: A Short History and Q&A”. Carl brought a massive collection of laps he collected and used over time. John and Carl discussed the types of laps, the benefits of the type of lap and which ones are still generally available. It was a fascinating presentation on the evolution of laps over time.

- Michael Holmes and Roger Dery shared “Starting and Running a Meetpoint Meetup” to introduce and encourage participants to run events in their local areas to support the art of faceting.
- Michael Holmes also taught a “Gem Cut Studio: Designing a Simple Gem from Scratch”. Participants learned the basic set up for a couple of basic gem shapes.
- Roger Dery wowed the audience with his activity of “Faceters’ Edition” modeled after the game show “Who Wants to be a Millionaire?” The activity was hit and winners walked away with some amazing prizes. Participants voiced they loved this activity with Roger.
- Cody Rosenberg presented “From Broken to Brilliant: How Glass Faceting Transformed My Life”. Cody, also known as Mr. Facet shared the process of creating glass composites to then be able to facet. He shared a variety of his art workpieces that all had the goal of using light to create unique outcomes. He brought a beautiful variety of his finished pieces for participants see.

- Justin K Prim shared “Emeralds Through Time: History, Sources and the Art of Emerald Cutting. Justin continually intrigues his audience with his depth of knowledge.
- Dan Lynch’s presentation “Sunstone & Sapphire-Finding, Mining, and Faceting!” Explored the mining opportunities in Oregon for sunstones and Montana for

sapphires. He shared a variety of methods used for mining and how to learn about the mines. Generous donations from several of the sunstone and sapphire mines provided a large array of door prizes for this presentation.

- Peter Torraca's "Cutting Softer Gem Rough" was enlightening as he discussed cleavage planes that impact the hardness of gems and is something to evaluate even over mobs. He shared his journey in cutting softer gems and tips he learned in the process.
- Ron Snelling and Cindy Hine presented on Maintaining your Faceting Machine and Q&A. Helpful tips on taking a machine apart for cleaning and maintenance were presented. Tips on alignment and understanding the designs of your specific machines were reviewed as part of the process of maintaining the machine and getting the best long-term service. The UltraTec and the Facetron were dominantly discussed in this presentation although the tips could apply to many other machines.
- Ron Snelling and Mark Oros shared their journey in building Faceting schools. Ideas and strategies were given about the models each chose in setting up their schools and curriculum.

- Mark Oros gave two other presentations, both that challenged faceters to try new things. "Doublets and Galaxy Gems" showed his elegant gems as he tried methods of using unique materials or imbeds opal in the culet of gemstones to create an otherworldly finished gem. He also presented "Fantasy Faceting Quartz Challenge" which presented a year long challenge with fantasy cutting, the tools and equipment he used, and several of the gems he created with the challenge.
- Keith Harrigill rounded out the symposium as he taught how the Faceting machine can also create beautiful intarsia gems. He shared how his intarsia is then put into jewelry created by his wife.
- Cari' Fifield ran a Round Robin activity that allowed for networking and discussing different faceting strategies in small groups.

On Friday, the USFG hosted a pizza party and the prettiest stone competition. Participants enjoyed mingling and networking with others. The attendees at the party voted by ballot for their favorite gems in each category.

The winners of the prettiest stone competition were:

- Fantasy Cut—Ron Snelling
- Synthetic Gem—Ron Snelling
- Natural Gem—Seth Dandridge and Phil Rowley (Tied)
- Door Knob—Seth Dandrige

Saturday Raffle winners:

- Lyra Solochek—HyperEdge 500 Lap
- Don Slowik—UltraTec Transfer Fixture, New Era Gems Silver Gift Certificate
- Randy Parker—New Era Gold Gift Certificate & UltraTec Dops
- Barb Yost—BA5T Lap
- Paul Armbruster—BATT Lap, UltraTec Index Gears, Gem Dragon Auctions Gem Rough Package, Tom Herbst Books, Justin Prim Book, New Era Gems Silver Gift Certificate, Faceting Diagram Book from Facetron/Facette
- Pitton Ekarintaragun—Crystallite Lap, Wooden Lap LLC lap
- Jeff Monforton—Darkside Lap
- Henry Isern—Mitchell Studio Gift Certificate
- Sarah Williams—LUAG Gem Rough
- Bob Challener—New Era Gems Silver Gift Certificate
- Larry Wall—New Era Gems Silver Gift Certificate
- Noah Trappier—Gem Box Set
- Brian Walker—item not listed in notes

Grand Prize Raffle Winner—UltraTec V5—Jenny Roseboom

A special thanks to all of our Vendors & Sponsors:

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- John E Garsow Gems
- Justin Prim
- New Era Gems
- Obsessed Over Gems
- Roger Dery
- Silver Hill Lapidary
- Spokane Bar Sapphire Mine
- TMS Gems
- Tom Herbst
- Toms Box of Rocks
- Unlimited Gems
- WoodLap LLC
- FoundADime Laser Engraving

We wish to acknowledge and that the USFG Events Committee for their work on the Franklin Symposium:

- Doug Augspurger
- Dan Lynch
- Barb Yost
- Ron Snelling
- David Smith
- John Campbell
- Josef Weiss
- Cari' Fifield
- Paul Armbruster
- Dennica Fifield

An Interview with Jenny Roseboom: 2025 Franklin Symposium UltraTec V5 Faceting Machine Winner

Interview by Cari' Fifield

Jenny Roseboom is the winner of this year's Faceting Machine Raffle. The USFG had a chance to interview Jenny to learn more about her faceting journey.

Jenny is a 19-year veteran Spanish teacher and serves as the prom advisor at the high school where she works. Outside of the classroom she and her boyfriend also run a DJing business and will DJ for around 30 weddings and events per year.

Being a Western North Carolina native, Jenny has had a longtime love of rocks and mining for gems. She typically makes weekly mining trips to the Franklin area during her summers off. She loves mining for ruby, sapphire, rhodolite and kyanite. Her boyfriend also tries to go mining with her when he can. After enough mining trips, her boyfriend encouraged her to find a way to do something with her gems. Jenny began investigating options and talking to family and friends. Her friend's aunt guided her to the William Holland School of Lapidary Arts. Despite learning about the school, she waited for another year and a half as she processed the ideas about the kind of work she would want to do in the lapidary arts. Jenny shared that she felt she could learn cabochon work on her own, but faceting would be more challenging to learn. At the end of this last school year, she was ready to commit to faceting and signed up at William Holland for a faceting class with Tom Mitchell as the instructor. She and her boyfriend decided to use the income from the DJ events for a while to cover her class costs for the next while as she learned the art of faceting. Her boyfriend was so supportive, he encouraged her to take the class even if he needed to cover a few DJ events without her assistance.

On Jenny's first day of class with Tom Mitchell, he handed out a quiz. Jenny chuckled as she said, "I failed." Tom was a marvelous instructor who "gracefully and patiently" walked through the class instruction. At the end of the weeklong course, Tom asked Jenny when she would be getting a machine. Jenny was excited about the possibility but knew it would be a financial investment. She would need to DJ quite a few weddings and use all the money from those events to save up. Tom Mitchell told her about the USFG Franklin Symposium and the United States Faceters Guild. He encouraged her to attend and if she wished, she could take his class in Franklin. Jenny was interested but had no machine. Tom graciously offered to lend her one for the 2-day Franklin faceting class.

Jenny did not have any clue what the Franklin Symposium would be like. She thought it would be another rock and gem show. Jenny "did not realize how much valuable information would be in front of her." She signed up for Tom's 2-day class and loved the additional instruction time with Tom. She was also excited about the Franklin Symposium presenters and topics. She decided she wanted to attend the entire Franklin Symposium.

In a discussion during the evening with her

boyfriend, she talked about the symposium and all she was learning. She talked about the upcoming UltraTec V5 machine raffle, but said she knew she could not go to the raffle on Saturday. She and her boyfriend were already committed to a DJ event on the same day.

Jenny's boyfriend response was, "No, you are going to go, and you are going to buy 10 tickets, and you are going to win." He loved the passion he saw in Jenny as she started this new faceting journey and continued to encourage her to pursue her dreams.

Jenny had a great time at the symposium, listening to presenters and meeting others. She enjoyed her time at the pizza party and the prettiest stone competition. And most important of all, she bought her 10 tickets. She said she was on an "emotional high" from all she had learned and experienced by the end of the pizza party.

On the afternoon of the Saturday raffle, Jenny sat in the Depot Room with the many other Franklin attendees and raffle hopefuls. She did not expect to win the raffle machine. When Doug Augspurger began to read the first of the numbers on the winning ticket, she realized it was in the beginning numbers on her tickets. Doug kept reading the numbers. The next couple of numbers matched. When Doug finished reading the final numbers, there was dead silence in the room. No one responded for a moment. Doug reread the numbers. Jenny could not believe her eyes. She was staring at the winning ticket in her hand. She said with a shaky voice, "It's me!" The room cheered as she made her way to the front of the room with the winning ticket in hand and tears of joy in her eyes. Her response was beautiful and emotional. She had her new faceting machine and could continue her faceting at home. She shared her beautiful story about getting into faceting with the attendees.

As we closed the interview, Jenny expressed gratitude to her family for getting her involved in rock collecting, her grandparents and aunts for encouraging her growth and education, Tom Mitchell for being so encouraging and such an excellent instructor, and the USFG for helping make a dream come true. The USFG congratulates Jenny for her win and encourages her to continue the marvelous journey she has begun.

The Magic of Recreating Famous Diamonds

Scott Sucher

Famous diamonds have always fascinated me since I was eight after I saw a display of glass replicas at the Lizzadro Museum of Lapidary Arts, now located in Oak Brook, IL. My interest in rocks continued and I started cutting opal when I was 14. At 19, I learned to facet, and cubic zirconia had just hit the market. After a bit of thinking, I put the two together and started researching famous diamonds to create my own replica collection. Now, over 4 1/2 decades later, I am still researching and my collection has grown.

Unlike many in the gem trade, I have always held an outside job to pay the bills. My career as an Air Force Combat Search and Rescue/ Special Operations instructor pilot sent me all over the world, a benefit when one wants to do research in far-off locations.

Once I retired from the Air Force, the next 30 years or so were in the civilian sector, but research and replica creation continued. After a while my body of work became noticed on the web, leading to work with the Discovery Channel, National Geographic, museums and jewelers all over the world, TV and movie productions, and traveling to give presentations with invitations to display my work.

Although well-known for my replicas, I have also cut a nice collection of natural stones. I have actually concave faceted sulfur, a first as this material is frail and sensitive to both thermal and physical shock (so sensitive putting the material in your hand that the temperature difference could shatter it).

Replicating famous diamonds is not an easy task. The historical record on many is scant. Much has been written about these diamonds, but often what is written is contradictory. For example, the Tavernier Blue has been reported to be the size of a hen's egg or a man's fist. Actually, at 115 carats, you can fit five or six of them easily into the palm of your hand.

The original research process circa 1980 involved locating photographs or line drawings of the stone to be duplicated. This process was slow and tedious as computers were somewhat of a rarity with limited capability. There was no such thing as the internet or email, and one round-trip of correspondence with an authoritative source could take weeks.

Once suitable documentation was found, tracing paper was placed over the photo or drawing, and the facet pattern of the crown and pavilion would be painstakingly transferred to the paper. Trigonometry would be used to analyze the facet pattern to calculate the angle and index setting for each facet. All this, of course, tempered by seven years of stone-cutter's judgment. Each step had its inaccuracies, so the final stone was a close approximation of reality. Good enough for display, but more of a representation than a true replica.

Fast forward to today. Computers have more computing power, the internet allows near-simultaneous communications, and graphics programs abound. References are no longer restricted to documents at the local library but can be purchased from the internet or provided through inter-library loans. Communication and coordination with

museum curators, professional cutters, and others are increased by orders of magnitude by email. Progress made in all these factors now allow far more accurate replicas to be created.

One side note. Remember the historical inaccuracies mentioned earlier that are on the web? These are the result of the older technologies that limited communication and coordination, but at the time the researchers did the best they could with what they had. The discoveries made today would not have been possible as the technology had not progressed far enough. The researchers shouldn't be faulted, but some information did need to be corrected.

The research process in use now starts by locating pictures or drawings of the stone to be duplicated. In all cases, a photograph is preferentially used over a line drawing, as drawings are subject to artist interpretation. A photo captures the stone objectively, it only records what the camera sees. Although photos can be in error to a certain extent due to parallax, spheroidicity of the lens, and other optical errors, they are the most accurate interpretation of reality. Parallax is potentially the most serious error, but professional photographers realize this and it is assumed that this is considered by a professional when provided a once-in-a-lifetime opportunity to photograph one of these phenomenal diamonds.

In some extremely rare cases, the research is performed on the real stone. This was the case deriving the data on the Hope diamond as a result of a Discovery Channel program. This subsequently led to a chance to measure the Blue Heart (Unzue Heart). In the case of the 186 carat version of the Koh-I-Noor diamond, Coster Diamonds in Amsterdam loaned one of their two glass models made circa 1851. One of the two plaster casts made of the stone in 1851 was borrowed from the Natural History Museum in London and studied over a period of four months. These are more preferential than using the numerous line drawings of this stone, as whose version is to be used, Bauer, Dieulafait, or someone else?

Line drawings of the pavilion and crown are drawn only after the best raw data has been obtained and analyzed. This is done by converting a drawing or photo into a digital format, and magnified anywhere from 3-30X. Lines are drawn at the edge of each facet with to-the-pixel accuracy until the full pattern materializes. In many photos, lines can be very indistinct, and in these instances, stonecutter judgment is tempered by knowledge of ancient cutting techniques and cultural preferences to fill in these areas.

Size, shape, and facet pattern must be accurately determined. This is no small feat, even though it could be reasonably expected that these are all documented for any world famous diamond. Wrong! There is only one place I've been able to find that lists the dimensions of the Cullinan III-IX diamonds. Not even the Royal Collections, Tower of London, or even the Queen of England had them, and they technically belong to her!

The line drawings are used to virtually "cut" the stone using GemCad. This program not only allows for determining the cutting angle and setting for each facet, but it also permits the cutter to become familiar with the actual cutting process. Interrelationships between facets, cutting sequence, and similar issues are discovered. This is extremely important, as learning this on a piece of rough is not only time-consuming but expensive. Although

cubic zirconia is relatively cheap, destroying a 2000 carat piece of rough unnecessarily involves a cost in money, time, and wear and tear on equipment that should be avoided.

Cutting a stone on the computer is a highly iterative process that can be very tedious when absolute precision is required. The simplest of diamond cuts, the standard brilliant, has 57 facets placed in a regular pattern, and each has its own angle and index setting. Fifty seven facets with two variable each, and you are simultaneously solving for 104 variables. (This is somewhat of an exaggeration. For symmetrical patterns, the variability is considerably reduced.) Try solving this for an irregular pattern such as the 186 carat version of the Koh-I-Noor, irregularly shaped with 169 facets, and it becomes quite a chore to duplicate. A slight variation on one facet affects all its neighbors, which affects all their neighbors, so a change on one facet affects the entire stone. It is not an easy process to juggle all the variables, which is why this phase can easily take 50-100 hours for a moderate-to-difficult facet pattern. And this is time invested before the rough even touches the lap.

Once the GemCad file is created, it is imported into a document containing the cutting instructions, dimensions, and life-size drawings of the stone from all angles. This document serves as the reference for the cutting process. Cutting is done using an Ultra-Tec and standard processes. A table gauge accurate to 0.1 mm is used to ensure facets are the proper size..

As good as GemCad is, and it is outstanding for this purpose, it still has its limitations. It is difficult to transfer the outline of the stone in the diagram to the computer model, especially if the girdle is ground and not faceted. The derived angles and settings still need to be tempered by stone-cutter judgment. There are nuances of the cutting process, such as stone-centering, over- and undercutting, stonecutter technique, and limitations of the faceting equipment, that can alter the calculated values. Many famous diamonds were not cut for symmetry, especially the historic Indian stones, which greatly increases the difficulty of creating an accurate replica using this program.

One of the most rewarding results from these efforts involves the effect it has on children. My wife taught middle school science for many years and would bring in the collection twice a year when discussing topics such as chemistry, color science, crystallography, and even economics. Kids would line up at the end of class and could handle the replica of their choice. They may do the middle school hunched over saunter when lining up, but after handling a replica worth many thousands of dollars they stride back to their desk with head held high, as for the first time in their life someone has entrusted them with something not only valuable but could be easily broken. This affected some such that my wife would receive letters years later from her former students – “Dear Mrs Sucher, I would like to invite you to my award ceremony for my Bachelor/Masters/Doctors degree in Math/Physics/Science and it is because of the day you let me hold a replica”. Between 3000 and 4000 students on three continents have handled them Yeah, they could have broken one accidentally years earlier, but I could always make another one. And with results like this, it was worth the risk. (Incidentally, not one was ever damaged!)

It is only through exhaustive research of historical records, and the participation of organizations such as the Smithsonian, the Royal Ontario Museum, the Natural History Museum in London, Coster Diamonds and Asscher Diamonds in Amsterdam, the Tower of London, and others, that these stones have come back from the dustbin of history as high-quality, historically-accurate replicas.

Interview With an Industry Professional: Farooq Hashmi, Gem Rough Sourcing

Interview by Dan Lynch

I met Farooq a long time ago, maybe 20 years, through a USFG event, and we have been industry friends since. He's always a go-to for great faceting rough. I've bought many stones from him over the years and thought it might be interesting to interview him for our newsletter, as he brings such a unique perspective. As we got into this, it was clear he had a lot to tell us, so we are going to do this interview in two parts. Part II will be published in the December newsletter.

DAN: For this interview, let's start with a bit about your background and how you got into the gem rough business.

FAROOQ: My mother is a second-generation Tanzanian, and my grandmother was also Tanzanian. My grandmother was born in Lindi, while my mother was born in Dar. After colonialism's collapse and Tanzania's independence, my mother departed for England to attend school and seek a better life. She migrated to Canada from there, where she met and married my father, and they ultimately immigrated to the United States.

My father's side of the family originally comes from Jalandhar in Punjab, India close to the border with Pakistan. Pakistan and India were formerly known as Hindustan and inclusive of Jalandhar. At that point, our clan had been there for centuries. However, we were forced to flee the religious cleansing that preceded the Partition, resulting in much of my clan's decimation. My immediate family were among the lucky ones to make it out to Gujranwala, Pakistan, which they made their new home. From there, they eventually relocated to Canada, where my father met and married my mother until ultimately resettling in the United States, a few years after my birth.

I mention that diverse background as it complements someone in the world of stones. It provides first-hand exposure to Africa through my mother's side, and Asia through my father's side. They are centered around two regions that dominate the global gemstone supply.

My grandfather's lifetime of working with precious stones provided the initial spark that fed my interest. His trading had stretched from Japan to Burma, with a strong presence in Indonesia, Burma, and Japan. I believe his base of operations prior to World War II was around Indonesia, not Jalandhar. His trade largely centered around Southeast Asia. With all the destruction throughout World War II, he lost everything in Japan and Burma, and was forced to return to Hindustan, where he started to rebuild his life again from scratch. I believe that was around when he met and married my grandmother.

Shortly after he started to rebuild his life, you had the partition of Hindustan. I think he

didn't believe that Hindustan could ever be divided. Due to that mindset and disregarding the events unfolding around him, he kept my family in place, which ultimately proved devastating. We had hundreds of houses belonging to our clan wiped out. Most of our extended family members were killed in the events that followed. Fleeing for survival at the last moment, my grandfather found himself in what is now Pakistan. Broken and devastated after losing everything twice in rapid succession, he never really recovered nor had the spirit to build himself up again. There was little my family was able to take because of the speed at which everything unfolded, and his denial of what was happening around him until the very end. Nevertheless, he did manage to bring some stones to Pakistan that inspired my father to stay connected to that world years later when they accompanied him to North America.

My father's endeavors in the industry were financially unsuccessful. That said, they left a lasting impression and introduced me to people like Brian from Gem Resources and Jay from Vista Gems. I must have been 16 when I went to my first Tucson show.

Thinking back to when I was in my early teens, there was an uncle of mine, Hamid, who somehow connected with my dad. That connection led my father to purchase a faceting machine Hamid faceted on. It was the first time we actually saw the art of gem cutting, as far as I recall. Hamid cut an emerald we had purchased in the rough from a store in Queens, New York. You don't see shops like that in New York anymore. It was a Raytech-Shaw he used to cut the stone in front of me when I was probably 10 or 11 years old. I fell in love from that age, and the passion has only grown.

Around the early 90s, my father became a dealer for Ultra Tec and purchased a faceting machine that he never unboxed for at least a year. One day, when I was around 12 years old, my father left the house. I didn't know where he went, but I knew he had gone far. I took the opportunity to pull the faceting machine out. I already had a basic understanding from watching uncle Hamid facet and quickly began to cut my first gemstone. I used all the laps from a cabbing machine to facet a heavily included rubellite. Not the prettiest stone, but knock on wood, by the time my father came home, it was faceted. It had eight pavilion facets, eight girdle facets, eight crown facets, and a table cut and polished on cabbing laps. Every edge was rounded but when my father saw the stone, his eyes lit up, and I was relieved I didn't get my ass whooped.

My early faceting served to motivate my father to continue to pursue his passion in the field. It led to his first trip to Kenya searching for rough. He faced many challenges, not knowing anyone there and was ultimately taken advantage of. He returned with limited personal success, but that continued to lay my foundation in the world of gemstones. As I grew older and faceted more, I quickly began cutting professionally. My passion continued to grow and in my later teenage years, I would sit and facet until I finished five to ten stones a day. It was at this time I gained a tremendous amount of hands-on experience in understanding clarity and cutting.

My finished gemstone inventory continued to grow and I gave selling a try; however, those efforts were never very successful. At that time, custom cutting, and much of the faceting that has since gained popularity, was considered taboo. Most buyers in the industry dismissed the gemstones I produced because they didn't fit the market demand. Jewelers, at that time, avoided custom jewelry preferring calibrated gems for ready-made findings. This ultimately pushed me away from finished gems.

A shift occurred around the time I turned 17, when I graduated from high school. After graduating, I traveled to Pakistan for six months. This was my first buying trip abroad and I spent most of my time in Peshawar, the center of the stone market. It was surreal. During that time, I learned a great deal about the local culture and people. Most of the industry was run by Afghanis, even though they're often called Pakistani. I gained a tremendous amount of experience from that trip and learned the art of haggling. There was nothing that could separate me from the world of rocks after that trip. Ultimately, Pakistan brought me the focus and motivation I had lacked. It led me to start selling rough online after I returned to New York to attend college.

Four years flew by and I graduated from college. I always had a passion for law and was determined to go to law school but took a break to work. I got my first job as a corporate paralegal in New York City. I was working there and selling stones online at the same time, so it was pretty much two full-time jobs. There reached a point where my income from stones rivaled my salary from work, and I began to grow disillusioned with the legal profession. I started questioning my desire to continue law.

After a year and a half, I left my job and traveled to Pakistan. A few weeks later, I was in Peshawar, trying to travel to Afghanistan. Then, the world changed. 9/11 happened. It also changed the course of my destiny. After that, I fully immersed myself into stones with serious capital for the first time. When I was 17, I didn't have capital, but that was different now. My job enabled me to pay off all my debts and provided the capital I needed to seriously begin my business. I went shopping.

When I returned to the U.S., it felt like a different world, compared to a few months earlier. I secured another position working in structured finance as a corporate paralegal. From there, I didn't have any overtime unlike my first job, so I devoted more time to selling stones online. I filled a void online providing rough at a time when there was little competition. I'd become the dominant player dealing in rough online. From there, it just kept growing and evolving.

In 2002, I got married and my wife migrated to the U.S. She became half of my world and took on a significant role in our business. She took on many responsibilities that allowed me to travel regularly for acquisitions. We had three beautiful children and the work began to overwhelm her, so she retired. At the same time, there was a six-month lull when everything fell apart due to the 2008 collapse, the real estate crash, and other factors. Shortly after, Asia took off. I opened an office in Hong Kong and shifted more into wholesale, changing from smaller sales to wholesaling in Asia. This lasted a few years before the market cooled and that is the foundation of how we got to where I am today.

DAN: How often do you travel abroad and how often are you buying estates in the US?

FAROOQ: I'm always shopping—24/7. Generally speaking, I was abroad for a minimum of six to nine months every year for decades. It was really COVID that changed that. After that COVID bump passed, I jumped right back into it. I did have a few breaks during the birth of my kids, when I took significant time off to be with my wife and family, but I usually got back to six to nine months per year pretty quick. Initially, I was primarily focused on Pakistan and Afghanistan and that region. After China took off, I shifted more towards Africa.

Regarding the estates in the United States, whenever opportunities come up, I'm always here looking. That grew more so after Asia, when China's market surged. At that time, due to very limited production and excessive competition, buying in Africa was not really an option.

DAN: Can you describe one of your typical trips for us from leaving to returning to the states with the materials?

FAROOQ: Typically, I go to Africa twice a year with occasional stops in Thailand. Thailand can serve as a secure base to transport before ultimately returning to the U.S. While I may occasionally return from Africa directly, it can be difficult to work across multiple countries and deal with border crossings with purchases. It is far safer at times to travel back and forth across the world then across an adjacent border when I have inventory.

Generally, a trip usually lasts about three months. Sometimes four or five, depending on production. In the past, I spent a lot more time buying from brokers and intermediaries. You always hear that you're buying from miners, but the reality is, you're usually not. From my experience overseas, you're not often exposed to miners directly unless you are going to the actual mines. Although I spent a lot of time early on working on-site in mining areas with miners, it's very challenging. It's hard to determine fair prices and compensate miners properly when your skin color and foreign status come into play.

I quickly realized that buying on-location was more taxing than I anticipated, so I focused on building relationships with the right people who could simplify the buying process for me. My adventures at the mines around the world has probably been the most memorable and it's probably something I miss the most when I'm overseas buying from brokers, dealers or larger intermediaries. It is really there, I collect, collect, collect, and it usually takes me months to gather enough to bring back to satisfy client demand. Most of my time is spent gathering inventory for outstanding client needs, I can usually sell it fairly quickly, as most of it is already spoken for before I even return. I have a good understanding of who wants what, based on my experience in the industry. When something comes across the table, I just pick up the phone and know who'd be interested. That is basically what a trip is like.

DAN: When buying abroad, can you walk us through a negotiation process? What challenges do you have? What challenges would I have in the same situation?

FAROOQ: When buying abroad and negotiating it is important to understand every country and region is different. There's really no uniformity. When I was in Pakistan, I learned a lot from my Afghan brothers, Pashtuns in particular. They were so different. I had grown close to many brothers there

over my years. They are a different breed of people. We would sit down and the first question after I looked at the material would be, “How much did you pay for this?” That’s how business was conducted. Usually, a brother would say, “Hey, I paid so and so.” I’d respond, “Okay. What do you want?” He’d say, “Farooq, what do you want to give me?” I’d say, we would generally settle at 5% or 10% and that was it. Alhamdulill_h, business was done very easy.

The problem was that Afghan material was costly. They bought at high prices and were satisfied with small margins. African rough, which I missed during my early years, was largely looked down upon. Dealers from Afghanistan, Pakistan, and even the West, considered the colors and material inferior compared to what they saw from Afghanistan, Pakistan, and some other countries. As a result, I was buying tourmaline for $50 to $100 per gram when, in Africa, it was only $2 to $5 per gram. I missed those years. That’s a different story from what we see now in East Africa and Africa overall. I’m sure you’ve seen it – they get a two-gram rhodolite and you ask, “How much?” And they ask something insane, but in reality, it’s only $20 in America.

Don’t get me wrong, I learned how to haggle in South Asia. Everything, from taking a cab to bargaining for fruits, food, is a long, drawn-out process in Pakistan. I got good at it. I learned better than most. It’s just not something I enjoy. Growing up in the West, I prefer straightforward pricing – just a sticker, and you decide if you want it or not. It makes understanding profitability in business much easier.

Some of the challenges we face, as I’m sure you know, include skin color, foreigner status, and the idea that we’re made of money, depending on the country. Sometimes, a lack of understanding of the local language can be a significant barrier. This can lead to the Muzungu tax. People often don’t understand what’s happening in those situations. It was similar in Afghanistan, but not quite the same. And it was similar in Pakistan, but not exactly the same as in East Africa either. Keep in mind, Pakistan and Afghanistan have changed a lot, but they’re still much more transparent than Africa.

In Africa, I see things that you can’t see in South Asia. You can see someone buying something for $10 and selling it for $3,000, $10,000, or even $100,000, but you don’t really see that in Pakistan or Afghanistan. I don’t believe that having pale skin, which some people assume makes them more vulnerable, actually hurts them. Sometimes, I think, I might be more exposed to danger than you would be. If you went into Afghanistan, you might feel safer than me, depending on where you go. Some of this has to do with you looking like an easier paycheck, even if that’s not really the case but it can be far more complex.

DAN: What challenges do you see today now that we live in an ever-changing tariff situation?

FAROOQ: This is something we could write a book about. There are many challenges today, and the tariff situation, under Trump, doesn’t make it easier. I believe it’s really the Patriot Act and 9/11 that changed the whole dynamic, rising value and appreciation for stones, heightening the demand for government oversight. We can debate the whole issue of money laundering and related matters, but for me, that’s not really the main reason our business is changing. It’s primarily the desire for government oversight, as there’s now real money in stones that everyone at the top understands. This shift has ushered in a period of increased scrutiny and regulation, which is hurting the industry in many ways, particularly by driving up cost.

There’s also this mine-to-market dynamic at play. With these greater levels of scrutiny, someone like me who buys rough and resells it, finds profit margins shrinking to the point of being nearly nonexistent. The people who sit in Africa collecting are now buying and cutting stones more regularly squeezing dealers like me out of the equation. When

you visit these major operators, most are already cherry-picking or cutting the most exceptional or valuable stones, leaving behind commercial material at exorbitant prices now.

The tariff situation has kept me on the sidelines since Tucson. It's been very unstable, creating an additional tax concern I don't believe the people would support. Do you really think people would be willing to pay significantly more for the same goods? The reality is, with my imports into the country, I do my best to stay within the law, especially here in the U.S. Everything I bring in is declared. However, the process has become very complicated. I'm trying to act ethically, both for others and for myself to avoid complications but that is becoming almost impossible.

I'm sure you understand that many people in the industry undervalue their shipments. It never made sense to me but this tariff situation has pushed everyone to a crossroads. I expect to see much greater devaluations in imports of cut stones and other items in the industry otherwise business will come to a standstill. Gold got a waiver but as of yet, not rocks. My current approach has been to wait and see. I have acquired some items, but I haven't brought them into the country yet; they are still abroad. I hope this situation resolves itself, and someday soon I'll be able to go abroad and bring everything back.

Aside from that, the increased scrutiny from KYC (Know Your Customer) regulations in banking is causing many problems, particularly for people like me. I would go further and say it disproportionately affects people of color and those dealing in specific fields. For example, when we do money transfers now, under KYC, stone dealers are considered high risk. Because of this, I think banks tend to avoid the risk altogether. The thinking is, "Why take the risk? We don't need to face the penalties because we're caught off guard." As a result, clients like me are seen as expendable, while big corporate players or those handling large sums—who have steady, ongoing operations with storefronts and regular check-ins— are treated differently. Consistency, in my world, doesn't exist, and it is the foundation banking today. My business operates differently; I spend three to four months acquiring materials and then sell them within a month. This lack of consistent activity triggers high-risk flags. It's unfair, but that's just the way things are. This is compounded by other issues within the industry, of which you are likely aware.

DAN: What is the most challenging part of your profession?

FAROOQ: Defining the most challenging part can be difficult, as it depends on timing. Sometimes, it's about acquisitions, patience, and managing everything abroad, only to come back to the States and hear complaints like, 'Oh, it's not perfectly clean' or 'This is too expensive.' You know how it is. It's not easy when you're buying abroad, especially because I'm trying to purchase larger quantities, unlike others. Getting quantity right now in anything nice is especially difficult.

Rising rough prices have changed the landscape. I think that's probably one of the biggest factors. Now, I'm here in the States,

traveling around, and I can buy finished stones for half, or even less than half, of what the rough stones yielding the same would cost abroad. This seriously impacts the future outlook of our industry, both for those dealing with rough and for cutters, as they are also experiencing these changes.

Personally, the part I dislike the most is dealing with the discrimination, which I encounter in all areas but especially in the United States. I feel I have to jump through more hoops because of my skin color, especially when it comes to banking, money transactions, or stones. And it extends internationally as well. Just like when there's inflated pricing based on where you come from or the color of your skin, and the assumption that you're made of money. You experience this more on a hobby level, where it doesn't impact you as much since you are not reselling the rough in volume or relying on it for your livelihood. For someone like me, a 20% or 30% loss can be devastating. I don't cut the stones; I sell them as rough.

In new countries where I haven't been before or where I lack trustworthy, reliable suppliers—which is already becoming rare—it becomes especially difficult. You need to invest time and effort into building those relationships, and it's not easy. If you're expected to pay those "taxes" or extra costs, it can really hurt, especially when your livelihood depends on it.

DAN: What is your favorite country to buy in and what is the most challenging?

FAROOQ: Every place is beautiful, in its own way, but I usually prefer the countries that are off the beaten path or rougher. I don't really like going to Thailand. If you ask me whether I would prefer Tanzania over Thailand, I would choose Tanzania. My favorite spot is Afghanistan, and then Nigeria. I also loved Congo. I got kidnapped there for four days, almost died a couple of times, and I'm not sure I want to go back because I know I'd end up in a body bag. But, man, it's just a rush—uncharted territory. It's like the gold rush days, where you could buy something for $10 and sell it for $10,000.

You can't do that in most parts of the world, especially outside of the most volatile regions. When it comes to Asia, it's a different story. Any Asian business, you're getting about a 5% or 10% return—that's what it's come down to. But in Africa, you can still double, triple, or quadruple your money. That is definitely not a guarantee in places like Tanzania or Nigeria any more but there are still better opportunities when compared to Asia.

For someone spending three to five months out there, if you're not making double what you paid, which I usually do with certain stones, not things like tanzanite, then it's probably a loss. You need to account for your expenses back home and where you are. You have taxes when you come back, costs here, and all the associated expenses. In the end, maybe it's not much. Sometimes I think I make just a wage, but I have the most amazing time doing this—it definitely beats sitting behind a desk doing structured finance or crunching numbers in a cubicle.

DAN: Were there any hard lessons you learned along the way?

FAROOQ: I have learned quite a few lessons in my travels. I spent ten days locked up, seven days in a hospital, and three months confined to a town when I was in Malawi recently on what was supposed to be a simple transit trip. I've picked up a lot of things on

my adventures.

I was "kidnapped" in Congo. I've been shot at, had vehicles blown up ahead of me, dodged the KGB in Tajikistan, and navigated through who knows what in Colombia. Let's just say, I've faced quite a few tough situations, and I've learned to be a chameleon and blend in. I've learned to spot signs and read people in ways most others wouldn't understand. It is hard to survive if you don't learn to adapt and evolve.

My biggest problem has really been my Western upbringing. That's probably been my greatest anchor. We're taught to do things a certain way—laws, rights, all that. But in many countries, all that goes out the window. In most of the world, it's about how you speak to someone and how you understand the people in front of you—if they're lions, wolves, or sheep, and discern their true nature.

DAN: I've always heard the closer you get to the source, the more often you will be presented with fake gemstones. Have you found this to be the case? Can you tell us about a time when you encountered this?

FAROOQ: Generally speaking, about synthetics, I feel blessed. I haven't been exposed to this much. In Pakistan and Afghanistan, it simply wasn't common for the most part. I think there was much more honor back then and there was far less involvement in that world. Usually, only a few families controlled that scene. They might have had thousands of members, but if someone did something wrong, it was considered damaging to the whole family's honor. Let's just say the consequences could be very harsh, very quickly. They didn't do things like this because of ethics, family names, respect, and so on.

In Africa, I've encountered synthetics more. On my trips, I haven't seen it very widespread though. I have only been fooled once, in Dar Es Salaam or maybe Arusha, where someone sold me synthetic sapphire. It was made in a way that mimicked those striations – etched lines, like what you see on spessartite. It was just wild. It was so real. Everyone I showed it to was like, wow—that's crazy. Most people would have fallen for it. GIA even did a write-up on that material. That said, I've seen fakes and various synthetics everywhere. I know a lot of people involved in that scene in Tanzania and elsewhere. So, I have a good understanding of what's out there. Over the years, I have developed a strong intuition for stones. It's not always scientific or easily explained, but from having handled so many stones and being in the field for so long, I've just learned to sense certain things. I try to err on the side of caution.

DAN: If you were going to advise the average USFG member who was planning a trip overseas to buy – what advice would you give?

FAROOQ: So, Dan, I watch you guys do these trips abroad. I've wanted to do these trips for a very long time, but it's really been a liability situation. A lot of that has to do with my legal background. Because of that background and my awareness of certain issues that many of you who do these activities might not understand, I'm hesitant and cautious. It can be pretty catastrophic for liability if something goes wrong with someone. That has probably been my biggest limiting factor.

I also do many things that are unorthodox, which may involve more risk. Not always, but there is always some risk involved. What if you bring someone with you, they fall, break their leg, just because of an unavoidable accident? They could come after me for that, and it's not something I want to deal with. It's not about me personally; it's about my family. I don't want to put them through the stress of having to deal with the consequences of my decisions, especially if it involves someone getting hurt.

However, I've been thinking about this more over the past few years, and it really comes down to connecting with the right people who can help navigate these situations. I haven't done that yet, but if I did, I would love to take people to Afghanistan. I think it would be an incredible experience. It would be great

to open doors and challenge the notions and misconceptions that have divided much of the world. While Pakistan has been visited more, and people are already familiar with it, I believe Afghanistan is just a different world. It could totally change our industry once people who are usually not comfortable or used to visiting such places actually go there.

DAN: For someone dealing with an international gem rough dealer, what advice would you give?

FAROOQ: I'd say flap your wings, explore, and share. Don't be afraid, you know? I'd tell people to find people they can trust, once they have that cemented, you don't need to carry heavy money. Talk to people, eat with them, share experiences, sit down, and tell stories. That's the most amazing part of traveling for me.

As for tools, I'd recommend a dichroscope, a Chelsea filter, a good torch, and a loupe if needed. That's about as good as it gets once you understand how to use them. Have experienced people show you some tricks of the trade. Remember, buyer beware — every place is different. That's just a quick rundown of the basics.

Do your homework on areas, exporting, importing, visas, and related issues, or be with the right people who can help. Don't venture into mining areas unless you know the right people. Start with the tried-and-true destinations like Thailand and Tanzania.

When talking about mail order situation. When someone in Africa has some material, you buy it—it's a sale, and the deal is done—it's a straightforward transaction. You think you can go back to most dealers there and return goods? At best, they'll look at you very poorly and refuse to do business with you again. Usually, they wouldn't even acknowledge selling you the stones. They'd probably say, "Oh, what stone?" or "No, that wasn't me." But on a hobby level, I mean, with the Pakistani guys, it's all PayPal, so you have some protections. Just understand that and take everything with a grain of salt. From my experience, most of the time—around 85%, if not 99%—I've been disappointed with what I received via the mail. The exception is when a new source pops up. Like when Congo started gaining attention–that was one of the few times I got the right mix of quality, and it was incredible. But it's not easy, that's for sure.

Look for Part II of the interview with Farooq in our December newsletter!

Lap Resurfacing, a How-to Guide

Chuck Gartmann

An ongoing irritation for faceters has been the high cost of polishing laps, leading to the need to resurface what you have. Even then finding a vendor that still offers this service is a challenge. The author is aware of only a few vendors who are still offering this service; generally found online. The cost averages about $40.00 per lap, sometimes with a setup charge. Then there are costs to ship and insure your lap(s), not to mention the time lost if these laps are the only ones you have. A solution offered here, is resurfacing own your laps.

These polishing laps tin, tin alloy (no lead mixed in), copper, master laps, Zinc/+, dual zone zinc, Batt Laps, type metal, Phenolic laps or even old cast iron laps such as Mehanite can all be resurfaced. Not all vendors will resurface all of these laps as issues with some may render them off a vendors list.

If you have been faceting for any length of time you may have one or more of these laps. Many clubs may have a collection as well. So how do we move forward? A precision surface grinding for this job comes to mind; possible, but way too costly. Those laps that have been used with chemical or diamond slurries offer no real problems. The process will work on diamond laps where the diamond is imbedded in the surface as well. Sintered or electroplated diamond laps are more problematic. These laps may require a very careful resurfacing. They will also dull and possibly ruin lathe tools more quickly. The cheap Chinese laps are not good candidates for resurfacing, nor are the coarse diamond cutting laps; top laps are off the list as well. Copper laps are usually accepted on a risk basis due to the fact that older copper “alloys” tend to be prone to causing problems during the resurfacing, leaving the outcome unpredictable, due to inconsistent surface quality, sometimes ruining the lap all together.

Lathe tools made of tungsten or tungsten carbide are recommended. Also needed are the taps and dies to thread ½” NC and 5/16”NC. Finally, the instructions regarding how to make the jig(s) are covered in this article’s instructions. Less the cost of machining, which will vary by location etc. the materials costs are less than $30.00. Note, this work cannot be accomplished on a mini lathe as they generally lack chuck size and swing clearance. Another problem for the hobbyist machinist is lack of a 10” chuck lathe. An 8” lap cannot be mounted directly in the jaws of a smaller lathe. A 6“ chuck requires a special jig fixture to resurface laps. That is exactly the jig manufacturing process that is described in this article. Figure 1 shows the simple materials needed; adding those various nuts, bolts and washers. Adding finished materials to the list reduces excess metal removal on the lathe saving time.

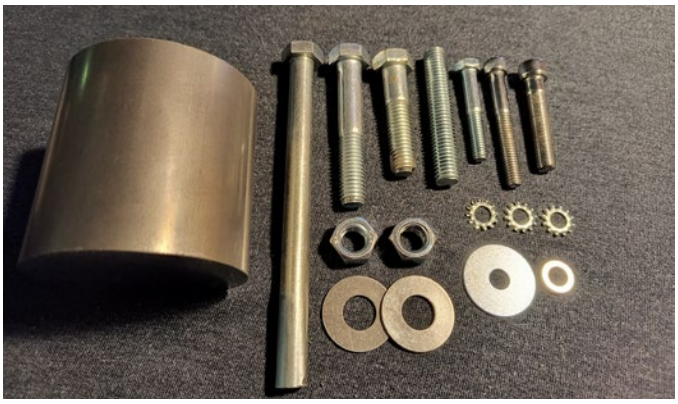


Figure 1: Project hardware and a 3 Inch cylinder blank

The 3” metal rod, cylinder or blank (now referred to as the platen) can be supplied by your lathe operator or sourced on Amazon for less than $30.00 for a cold rolled steel 3” diameter by 3” length. Amazon sourced platen rod arrives with only minor clean up needs; but you will need to cut it into 1” or 1 ½” lengths. This machined final result will work for either 6” or 8” laps with a ½” arbor hole. The final finished platen size provides the back support for the lap being resurfaced;

acting much like your faceting machines platen. Referring to Figure 2 the final products that can be manufactured are shown.

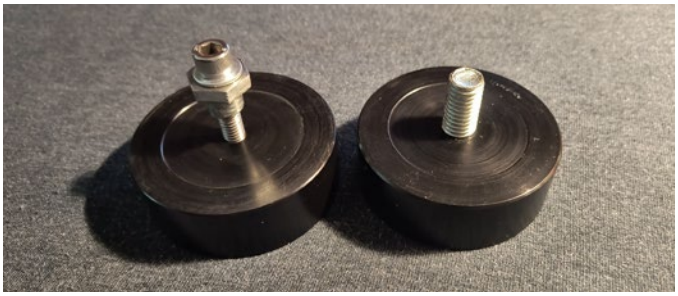


Figure 2: a platen with an arbor bolt on the left, and a platen with a spindle arbor on the right

Steps to manufacture the jigs are as follows:

1. Assemble the materials.
2. Clean up the 3" platen block and cut into 1" or 1 and 1/2" blanks.
3. Drill and tap the platen block for ½" arbor bolt; NC (national coarse) threads. Fine threads are actually difficult to cut even on a lathe, especially if the material is hard as some steels are, the threading tool cuttings cause inconsistent thread quality. The NC threads work fine in this application. The retention nut also clamps the lap tight to the platen.
4. Assemble the ½" arbor screw to the platen.
5. Attach the lap to the jig; spin up to speed on the lathe, checking the assembly. Make sure the nuts are tight!
6. The arbor nut should be tight; use a crush washer shown in Figure 1.
7. Proceed to dress up the lap surface.

Begin by checking your lap arbor hole(s); it can't be under ½ inch. One or two hundredths over is ok. The machinist can determine the necessary tolerances for your lap(s). Measure the cylinder dimensions, parallelism of the faces and perpendicularity of the platen as well. Clean up on the platen piece can be accomplished by making shallow cuts to true up the platen's sides and faces. Chamfer all edges. Then proceed as listed below.

1. First, a ¼" pilot hole is drilled centered on the platen block employing a tailstock drill chuck; then set up to drill an 8/64's hole to be tapped for ½" NC (national coarse) threads. Once assembled this serves as the arbor, nut and platen for the lap retention as show in Figure 1, far right. The 2 and 1/2" arbor screw was sourced already threaded from Ace Hardware, then trimmed once installed. Figure 3 shows finished jig with a ½" clear master lap mounted on the ½" screw arbor bolt. The platen block is easily seen through the clear lap. Recognizing this jig can be made employing multiple methods, a second method follows using an arbor bolt described next.

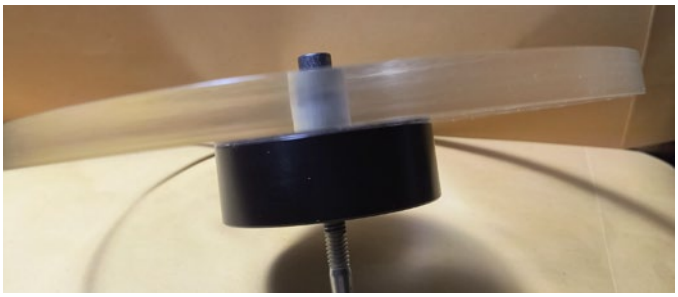


Figure 3: Edge view, lap mounted on platen

2. Figure 4 shows two lap retention arbor bolts. A 3/8" bolt, on the far left, is all one piece cut on the lathe and threaded from a regular ½" bolt as seen in Figure 1. Also seen in Figure 4 is a finished platen with a 5/16" lap retention arbor bolt. This was cut from a ½" bolt as well, but threaded for a 5/16" cap bolt.

Figure 4

The platen was also tapped for that 5/16" size bolt as well. Method 1 places the arbor on the platen block. Method 2 employs an arbor bolt clearly depicted in Figure 4. The actual lap resurfacing proceeds the same no matter the arbor type used.

The lap machining process is accomplished by making taking small, shallow facing cuts with a slow "automatic" cross feed rate to remove all the damage or irregularities from the lap surface. The goal here is to remove only that material needed to eliminate the damage; returning the laps to an even flat surface suitable for polishing. Cutting tool movement is always from the center to the edge of the lap. The amount of material to be removed on average ranges from .040" to .080". Use a tungsten lathe tool with a very small sharp radius tip to make those small increments to remove material to keep the surface as smooth as possible. This machining will leave a very fine series of circular lines on the lap surface. Provided you have cut very slowly with that sharp tool these concentric lines will be very fine and not deep into the lap surface. Depending on your intended lap's use, you may want to further smooth the surface. A final burnishing with a corundum boule using the rounded half facing the lap surface may be all that's required. Or consult with your lathe operator to determine what he/she recommends. Before you start, you should always discuss your expectations, wants and needs with your lathe operator.

Note: Various articles are out on the internet outlining other lap reconditioning procedures and techniques. Just type in "Reconditioning or Resurfacing Faceting Laps" in the search line.

A lathe with an automatic cross feed capability is required! Also required are both the inside and outside exchangeable jaws to accommodate creating both arbor bolts and the platen block.

Observe and Practice all Lathe Safety Rules, Including: No Long Hair or Sleeves; No Rings, Watches or Gloves and Finally Wear Safety Glasses at all Times. Lathe operations can be dangerous if not done properly! Therefore the, author can accept no responsibility or liability for how the data presented in the article are used. Use at your own risk!

Other than my own laps I do not intend to take in laps to resurface from other faceters within the community.

Longevity member profile: Mark Oros

In this new feature, we are going to spotlight a member of the USFG that has been active for 10 or more years. This month, we will shine a light on Mark Oros of Hashnu Stones & Gems, LLC. Mark has been a member of the USFG since September 2014.

How long have you been faceting?

I started gemstone faceting January 2012

What do you do with your faceted gemstones?

I sell to collectors, jewelers, present them at

shows, and give them to friends and family.

What is your favorite material to facet and why?

I love to facet quartz because I can facet large gemstones affordably. A large gemstone gives me a grand canvas to add many facets, use intricate designs, and include carving/fantasy facets. This allows me the creative space to explore the potential of the gemstone faceting.

What is your least favorite material to facet and why?

Cubic Zirconia is my least favorite gem material to facet because the time/profit ratio is low and my clients prefer natural material.

Who/What has been the biggest influence on your gemstone faceting journey?

I have four major influences on my faceting journey.

Joe Rubin from ULTRA TEC was my first major influence. He convinced me to upgrade to a V5 and Fantasy machine. His faith in me created the much needed self confidence in my gemstone faceting.

Jim Perkins significantly influenced my understanding of gemstone optical properties and different attributes of gemstone performance.

I was influenced by the book, "American Lapidary: Designing the Carved Gemstone," by Henry Hunt, especially the addendum to the book, "Speech Given By Henry Hunt Before The Gem Artist of North America, Feb 4, 2005."

The Corning Museum of Glass is a source of inspiration because it shows me glass artists playing with light using glass as a medium.

What is the best faceting advice that you have received?

The best advice was, "You can not compete on price, so compete on originality."

What is your favorite faceting tip to give?

My advice is not to skip laps. Each lap/grit in the sequence does a lot more than take out the previous lap/grit. You gain more time with your gemstone which allows you to understand the attributes of that specific gemstone, and be much more meticulous. What's the hurry?

Are there encouraging words you would like to share with your fellow USFG members?

Just keep faceting!

What is the secret to a great polish (optional)?

The secret to a great polish is a great pre-polish.

Meetpoint Meetup: Baltimore

Maggie Klinedinst

The Gem Cutters Guild of Baltimore (GCG) hosted the second Meetpoint Meetup over Memorial Day weekend. We were excited to show off our Guild which celebrated its 75th anniversary on May 2nd of this year. With this meetup, we tried to keep the core structure of the inaugural Meetpoint Meetup and embedded some additional learning opportunities based on attendee interest. Our attendees traveled from as far as Michigan and North Carolina, and the core group was from the Baltimore / Washington DC area.

Preforming Demo w/ Roger Dery

Attendees were curious how to preform stones to achieve optimal yield and cut out inclusions early. For many of us, we hadn't spent significant time preforming stones. Roger helped us understand the benefits of preforming and how he does it on a flat lap. Some attendees chose to use the Guild's cabbing wheels to preform as well. Practicing in the synthetic sapphire was a great learning

experience and also set everyone up for success for laying down our facets efficiently.

Cut Together

Baltimore's meetup did a cut together of a synthetic sapphire in Marco Voltolini's "Cedar" which is a checkerboard pear. We focused on cutting together and helping each other troubleshoot as we approached a difficult tier or wanted some ideas on polishing.

To ensure we avoided cramping we got up for periodic demos, lunch and snack breaks.

"Orienting Challenging Rough" Discussion w/ Roger Dery

Before the event, we surveyed attendees to see what they were interested in learning and a common theme was how to orient tricky rough. Attendees brought rough that was complicated for various reasons, or had a higher value where orientation would be critical to the gem's finished value. We used a camera to project the rough on a screen, and Roger helped us understand orientation to maximize color and intrigue.

GCS Demo w/ Kari Warpinski

Kari Warpinski put together an accessible demo to understand how to scale designs in GCS. This opened possibilities for attendees to scale designs to better fit their rough. We also did some general discussion for those less familiar with the application.

Charging Lap Demo w/ Roger Dery

Keeping with a popular demo from the first meetup, we reviewed Roger's method for charging a Batt lap with diamond powder and a norbide stick.

Film Screening - "Sharing the Rough" (2015)

Lastly, we closed out Saturday with a screening of "Sharing the Rough", a 2015 documentary featuring Roger Dery. The film followed small-scale mining operations in East Africa (Tanzania and Kenya). We opened up the event to members of the Guild and had a dynamic and engaging discussion after the film. It fit into the weekend perfectly and helped tie together more aspects of the craft.

The weekend was a success and for some attendees, it was the first time (outside of a class) that they had faceted alongside others—we learned from each other and left the event feeling energized about cutting and implementing our new knowledge and refined skills.

From the Archives: Gemology for Faceters #4

L. Bruce Jones, G.G., F.G.A., D.Gem.G.

Editor's note: I thought this in-depth series from 2010 would be an interesting and important one to share with current members. We will publish the rest of 6-part series over the next two issues.

In the last issue we discussed an important instrument for gem identification, the spectroscope. In this, the fourth installment of a planned series of articles, we introduce magnification and discuss the loupe and the gem micro- scope as very significant instruments in our quest for proper gem identification.

The Loupe

The jewelers loupe or hand lens is the instrument in the gem trade that gets the most use. The loupe is portable, convenient and easy to use, although there are a few tricks that can increase its usefulness substantially.

Loupes typically come in magnification ranges from 2x to 30x with the 10x loupe being the most popular and the most useful under most circumstances. With a 2x lens the object image appears twice as large in diameter as its actual size. With a 10x loupe the object image appears 10x larger in diameter. As magnification increases, the focal length, which is the distance from the surface of the lens to the point of focus, decreases. The focal length of a 10x lens is one inch, but for a 20x lens it is 0.50 inch. The depth of field, the distance or depth of area that remains in focus also decreases with magnification. The combination of a short focal length or working distance and a limited depth of field make high magnification lenses significantly more difficult to manage.

The type of loupe most useful for the gemologist is the triplet, which refers to a

loupe composed of three lenses. Single lenses suffer from two issues:

Chromatic aberration is a distortion that causes color fringes around the image due to optical dispersion of the glass. It is corrected by combining two lenses of different dispersion, one bi-convex and one bi- concave. An *achromatic* doublet is made to focus both red and blue light at the same location and is typically composed of a high dispersion concave flint glass element cemented to a low dispersion convex crown glass element. The higher quality *apochromatic* lens is made to focus red, green and blue light at the same location.

Spherical aberration is found in curved lenses and refers to the lens' inability to focus light across the lens at a uniform distance. The edges of the image appear distorted. This can be corrected by using two or more lenses of differing radii or by using an aspheric bi-convex lens.

A *Hastings Triplet* is the most common form of quality fully corrected loupe that is widely available and comprised of three lens elements, generally cemented together. It is typically superior to both the doublet and Coddington lens systems.

The diameter of the lens is related to both the field of view and the light gathering capacity of the lens. A small pocket loupe will generally be about 15mm in diameter. A larger loupe will be approximately 20mm in diameter. Interestingly, a number of manufacturers note the full diameter of the lens as opposed to the actual viewing area. For instance, the Gem Oro loupes said to be 21mm only have a viewing diameter of 18mm. Likewise I have an inexpensive Chinese loupe with built-in LED illuminators that claims 20x-18mm that is actually only about 12x-16mm.

The loupe in the top left is a Bausch & Lomb that has served for 30 years. You can buy one today for less than $35. Center left is a Gem Oro 10x loupe followed by a Gem Oro 20x loupe that while advertised as a triplet suffers from substantive spherical aberration. Upper right is generic Chinese loupe with built in LED light. Bottom right is a GemologyPro Harald Schneider unit that is the highest quality 10x Achromatic-Aplanatic Triplet and costs $300.

Construction Quality

In addition to the quality of the optics the quality of overall construction is important. Some loupes have cheap die- cast bodies with friction rings to secure the lenses and under hard use the bodies will break and the friction rings will fail and the lens elements will fall out. Pivot construction is also important. If the pivot wears out prematurely the lens friction will be lost and the lens will dangle from the case. If the pivot fails completely the lens assembly will separate from the case.

Recommendations

Bausch & Lomb makes a high quality Hasting's Triplet in 10x that can be purchased from many suppliers for less than $35. With proper care it will provide years of service.

For those for whom only the best will do a Gemology Pro Harald Schneider 10x-20mm corrected triplet can be purchased for $300.

Lighting Hints

In many cases the loupe is used where there are not many lighting options. In such cases it is best to let light enter the side of the

gem which will highlight internal features and still provide a good view of the surface of the stone. At times you can use reflected light where you position the stone with respect to the light source such that light reflects off the gem's surface. The reflected light technique allows you to see the facet junctions, the condition of the polish, any surface reaching fractures or imperfections as well as any cavities, naturals or abrasions. I can only surmise that faceting contest judges are highly adept at this technique and can see point deducting artifacts the rest of us cannot!

One effective technique for utilizing a loupe has the index finger inserted through the casing with the hand steadied by thumb contact with the cheek and the lens an inch from the eye. The opposite hand holds the tweezers with them locked under the little finger of the loupe holding hand. The stone then rests approximately an inch from the lens. The printing on the loupe case should always face the eye.

A more arcane technique is to use darkfield illumination with a loupe. You can do this by purchasing a darkfield loupe, or, more simply, by taping a piece of black paper to the back reflector of a desk lamp. Line the girdle of the stone up with the front edge of the lamp reflector so that the lamp light is entering the stone but the loupe is kept out of the light. You will find that the inclusions in the stone stand out strongly against the dark background. If possible, turn off the room lights when you use this technique.

And finally, you will find that diffused lighting can be effective in finding curved color banding in synthetic flame fusion material or diffusion treated stones with surface coloration. In this case a translucent piece of paper between the light source and the stone will often be effective.

The Gem Microscope

If I am in out in the field with my geologist's hat on, or at a gem show, then a loupe is always around my neck on a lanyard. However, if I am anywhere close to a gem microscope I abandon the loupe immediately and without remorse.

Microscope Types

The gem microscope differs fairly significantly from compound microscopes used by scientists. Most gem microscopes are binocular, in that they have two eyepieces the observer uses simultaneously with both eyes open. As a result, viewing is generally comfortable for long periods of time. Most gem microscopes are stereo units in that there is an angular difference between the view between each eye so objects are seen in 3D. Other advantages are that the view is spatially correspondent where with a compound microscope the view is upside down and backwards. Stereo microscopes are also designed with lower magnification to have a larger field of view and good working distances with excellent depth of field. In gemology, it would be unusual to use more than 100x with most work being done in the 10x-30x area. Besides gemologists, surgeons, engravers, and electronic circuit board technicians are examples of people that use binocular stereo microscopes.

Background

Microscopy is a complex subject which we can simplify somewhat by virtue of the fact that we are dealing with gem microscopes and not the more complicated compound microscopes.

Magnification causes the object viewed to appear larger to show detail that we cannot see with the human eye alone. In microscopy,

the magnification is the product of the power of the eyepieces, also called oculars, times the power of the objective lens, which is the lens closest to the object being viewed. A typical 10x ocular and a 4x objective would give a magnification of 40x. The units are "diameters," where an object with a diameter of 1mm would be viewed as if it were 40mm in diameter. If the microscope had a screw-on 2x doubler, the magnification would be 80x.

Resolution is the ability of the microscope and the viewer to separate two close objects as individual and distinct. The higher the resolution, the smaller the two objects can be and the closer together while still remaining distinctly separate. Without resolution you have *empty magnification* where further detail is not resolved and the objects combine in a blurred single form.

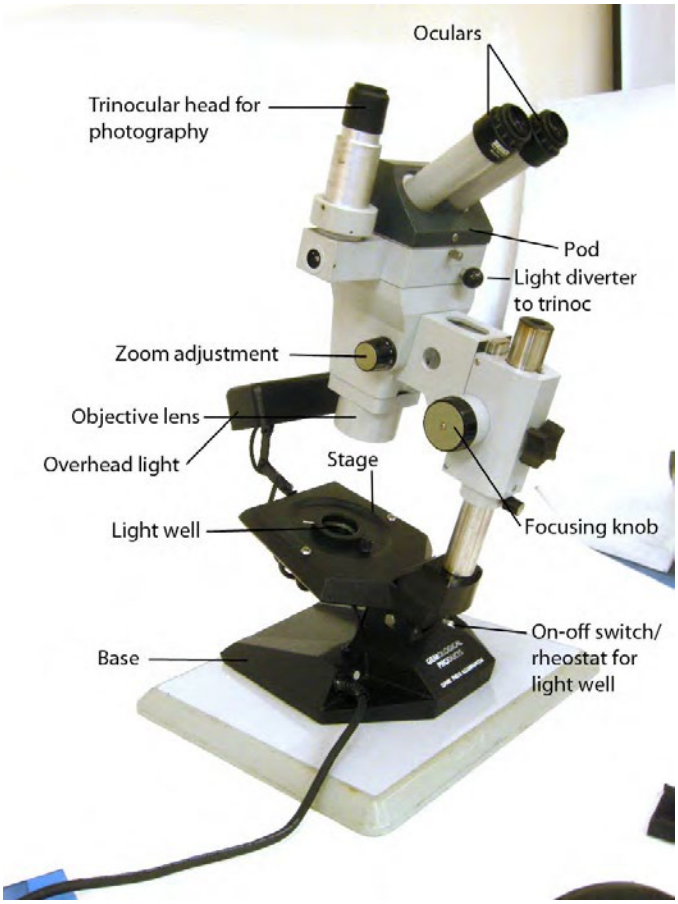
It is interesting to note that in microscopy the size of the object that can be seen is ultimately a function of the source wavelength. The limitation of a well made compound microscope is magnification of 1000x (1400x with oil immersion), yet because the wavelength of electrons is very much shorter than that of photons an electron microscope can magnify over 100,000x.

Gem Microscope Components

Today, the majority of quality gem microscopes have zoom capability such that the magnification is continuously variable over a certain range. For example 0.7x to 6.4x engraved on the zoom knob represents the objective magnification and would give you an effective range, with 10x eyepieces, of 7x to 64x. if the eyepieces were 15x the range would be 10.5x to 96x.

The components shown in the image below are fairly self explanatory and are common to most gem microscopes.

The first step in using the gem microscope is to properly focus the unit.



The author's trinocular Zeiss Stemi SV-8 mounted on a Gemological Products base.

Focusing

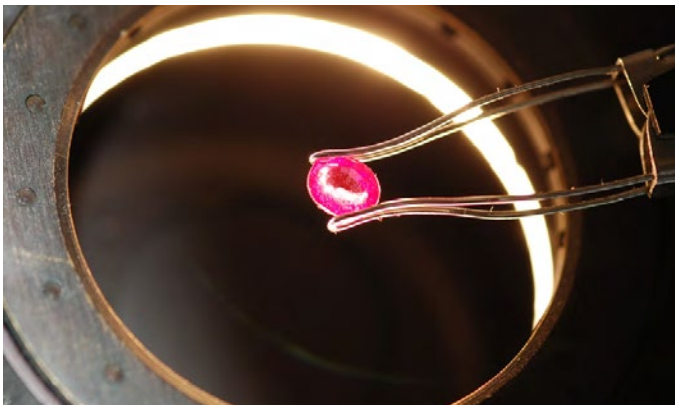
To focus the microscope turn on the unit and adjust the rheostat so ample light is emitted from the light well. Place a gem or other object in the center of the field of view and set-up for 10x magnification.

Look through the right ocular (e.g. eyepiece) with your right eye, keeping both eyes open and focus on the object by turning the focusing knob on the microscope until the object is clear and sharp. Now, leave the focusing knob alone and look through the left ocular, turning the focusing ring at the base of the ocular until the object is in focus.

Now look through both eyepieces and adjust the distance between them if necessary. The object should be in clear and coherent three dimensional focus.

Some people have trouble keeping both eyes open and focusing with one eye. In that case you can remove the alternate ocular that

is not in use. Remove the left ocular while focusing the right and vice versa.



Darkfield illumination. The black background makes inclusions stand out.

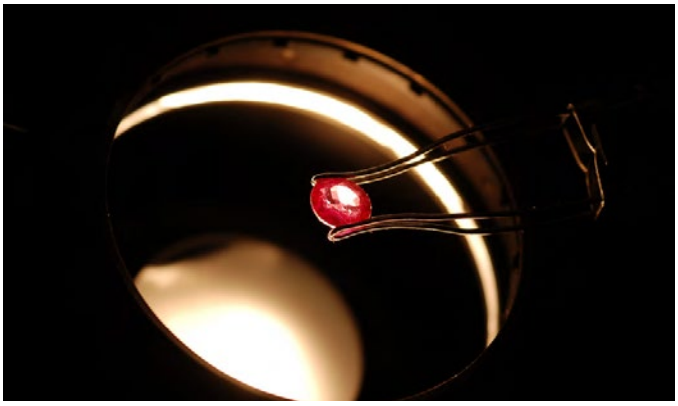
Types of Lighting

Darkfield illumination is the most useful type of lighting for gem observation. When the microscope is set- up for darkfield illumination, light enters the gem from the sides and back and the background is black, allowing most internal features to be highlighted.

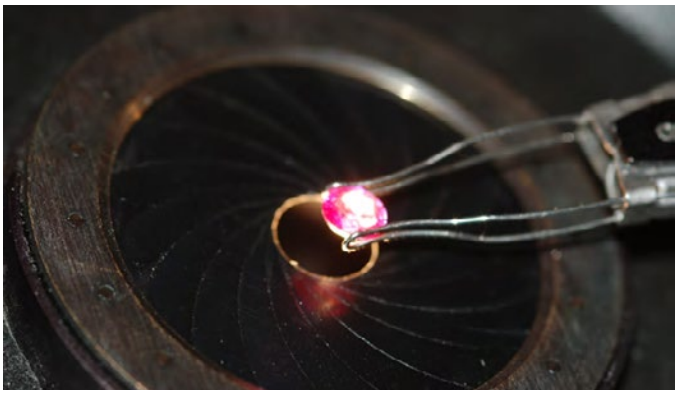
Gemological microscopes are set-up with dark field illumination specific to maximizing the observational capabilities with three dimensional objects. More darkfield illumination systems are found on biological microscopes where they are optimized for flat lab slides. These systems are not at all suitable for gemology and should be avoided.

Brightfield illumination or transmitted light illumination happens when the darkfield baffle is removed and light passes directly through the stone creating a light background. Brightfield illumination is often most useful when the iris diaphragm is closed to just under the diameter of the stone creating pinpoint illumination that is more collimated. Low relief inclusions and curved striae in flame fusion synthetics are best discovered in this configuration.

Reflected lighting is quite valuable to faceters as it is used to reflect light off the surface of the stone and to therefore highlight facet junctions, inclusions that reach the surface, abrasions, polishing marks, ghost facets, cracks, crevices and naturals, etc. Most gem scopes have an overhead daylight fluorescent light and some have a separate incandescent spotlight built under the pod. A separate fiber optic light source can be used for reflected light observation as well.



With brightfield illumination the black baffle has been swung out of the way allowing a bright background. The effect is most obvious when viewed through the microscope.



Here the iris diaphragm is closed down beneath the stone allowing the brighfield rays to be more collimated. This condition is good for observing curved striae.

In this case of reflected light no light is coming from the light well. All the light is coming from the fluorescent daylight light-source above the stage.

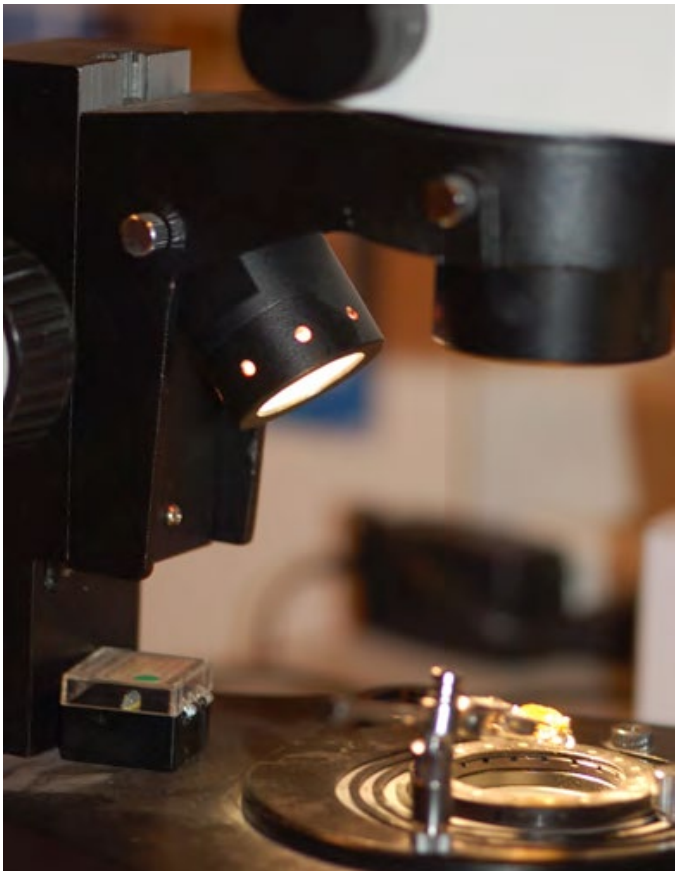
Diffused lighting involves placing a white diffuser over the light well. This can be as simple as the cover of the overhead light or a piece of white tissue or it can involve a special filter placed over the light well. Diffused light softens the light and eliminates reflections. It is a good way to observe the actual color of inclusions or, with a polaroid filter placed between the stone and the objective, to observe pleochroism in an inclusion.

Polarized lighting is very helpful in observing strained crystal inclusions, twinning, optic figures and birefringence. A pair of polaroid filters, one placed between the gem and light source, designated the polarizer, and one between the gem and the objective, called the analyzer, is all that is required.

Fiber optic illumination takes advantage of fiber optic illuminators to add an amazing amount of versatility to the microscope lighting issue. Light can be added from virtually any angle with either fixed-flexible light pipes that stay where you place them or by small totally flexible smaller diameter light pipes to which tips of specific shapes and diameters can be added for pinpoint illumination and light painting.

Immersion is a microscope technique where a gem is placed in a container of liquid that approximates its refractive index (i.e. methylene iodide for corundum), thus eliminating surface reflections of all types. Immersion can be carried out in plain or polarized light and with a vertical microscope set-up equipped with an immersion cell, or more conveniently, with a horizontal immersion microscope. Immersion is effective for observing curved color banding, surface diffusion, plato lines, gem treatment evidence, country of origin inclusion studies, etc.

Polarizing filters, horizontal immersion cell and camera adapter for ocular port.



An incident illuminator provides bright reflected light and is controlled by a rheostat separate from that of the light well.

An Eickhorst horizontal microscope base designed for immersion and polarization work. The base is fitted with a B&L Stereozoom 5 head.

Photomicrography

Once you've invested in a microscope one of the most interesting things you can do is equip your gem scope with a camera system that allows you to take quality photographs of internal and surface features of gemstones. The subject of gem photomicrography is

complex and the space available here does not allow for much discussion. Interested readers are directed to the many articles written by GIA's John Koivula, the world's foremost living gem photomicrographer and inclusion expert.

There are two types of gem microscopes suitable for taking photos. Most commonly, a binocular microscope can be used with an attachment that allows a camera and adapter to be inserted into the space once one of the oculars is removed. Virtually all binocular microscopes have ocular diameters of either 23mm or 30mm and so to order an adapter you need to know the appropriate size for your microscope. Since most adapters screw on to the filter threads on the front of the camera lens, you'll need to know that diameter as well.

Some microscopes are trinocular in that they have a third viewing port and ocular specifically for photomicrography. The advantage is that the camera can remain mounted while the user is viewing the gem through the eyepieces.

Many older microscopes with trinocular arrangements came with dedicated elaborate film camera systems with automatic exposure controls. In their day, they were expensive and effective but with the advent of new DSLRs they are generally superfluous.

Obtaining a Microscope

There are a number of gemological microscopes on the market and essentially the buyer has three choices, 1) purchase a new gemological microscope from a reputable source, 2) purchase a used complete gemological microscope with darkfield/brightfield and reflected light capability, 3) buy new or used components and assemble a gem scope to meet your needs.

New Microscopes

In my opinion the least expensive new gem microscope that is of adequate quality and has the necessary features is the GemOro Elite 1067zx which can be purchased for approximately $800

Next on my personal list would be any of the gem scopes made by Meiji, ranging in price from about $2300 to $3400. These gem microscopes are the price-value leaders with excellent optics and durability.

If you don't mind shopping in Europe the gem microscopes by Eickhorst and also by Krüss are excellent pieces of equipment.

I absolutely would not buy a new gemological microscope from anyone else. No eBay Amscope models nor anything offered by GIA which, in my opinion, is overpriced for the quality currently offered.

Used Gem Microscopes

Older GIA Gemolites with Bausch & Lomb or American Optical heads can be found on eBay at reasonable prices and make excellent scopes. It is absolutely preferable to buy quality used equipment as opposed to buying cheap new equipment that will not provide adequate service, reliability and longevity.

If you can find used Meiji, Eickhorst or Krüss scopes, by all means consider them. All others not mentioned here should be viewed as suspect.

Assembling Components

Assembling a gemological microscope from used and new components is an excellent idea that has one significant drawback. There have been very few dedicated quality dark-field illumination systems made for gemological microscopes. The quality of the darkfield illumination in a gem scope is at least as important as the quality of the optics.

There is only one producer of high quality gem microscope bases where you can pick your optics and have them mounted, and that is Jeff Wildman's Gemological Products in Sunriver Oregon. (http://gemproducts.com). Jeff sells quality refurbished microscope heads (Nikon, Leica, Leitz) that can be mounted on his incomparable base resulting in a system of the highest quality. Jeff will also mount virtually any microscope head you can find to his base, including those

by Zeiss and Wild that require significant modification to fit.

It's important to note that there are a lot of quality used microscope heads available with excellent optics. Years ago the best microscopes were made in Germany and Switzerland by companies like Wild, Zeiss, Leica, Leitz and Aus Jena, in the U.S. by Bausch & Lomb and American Optical and in Asia by Nikon, Olympus and Meiji. Some of these companies are no longer in business and others have outsourced manufacturing to Asia where in some cases quality has suffered making an older microscope a much better buy. A list of microscopes to buy and avoid can be found here: https://absoluteclarity.com/library/stereo-microscopes-to-buy-and-to-avoid/

A Faceting Set-up

In some cases a faceter might not be interested in the gemological separations and determinations a microscope can help make. In this case a simple stereo microscope equipped with a ring-light and mounted to a base and boom configuration can assist with detailed microscopic viewing while the stone is on the dop. Older Bausch & Lomb Stereozoom 5 heads were made by the thousands and can be found on eBay occasionally at prices below $300 and these seem to be particularly well suited to this application.

An Eickhorst horizontal microscope base designed for immersion and polarization work. The base is fitted with a B&L Stereozoom 5 head.

Applications in Gem Microscopy We've discussed some of what you can accomplish with a gem microscope. Besides evaluating gem quality in terms of color, cut and clarity and detecting all manner of assembled and imitation stones, the study of inclusions, although complex, is incredibly valuable and can tell us much about a stone. Synthetic stones have certain characteristic inclusions and internal features based on the manufacturing technique and inclusions in natural stones occur in a remarkable and complex variety of forms that can tell us about the geologic conditions of formation, the geographic source of the stone, the stone's age, etc.

An Olympus BH-2 series set up for Raman microanalysis where laser light travels through the optic train and the objective lenses directly impinging on the sample at a 90° angle. The Renishaw Raman system is confocal and can identify virtually any organic or inorganic substance.

If you are interested in gem inclusion analysis there is one body of work that easily stands out as being the definitive and authoritative

source for information on the subject, and that is the three volume set of the Photoatlas of Inclusions in Gemstones by Eduard J. Gübelin and John I. Koivula.

Conclusion

It has often been said that the basis for gem identification is the triad comprised of the refractometer, the spectroscope and the gem microscope. Along with the introduction in Gemology for Faceters #1 we've now discussed the main three gemological instruments and the four articles combined will be placed in the USFG newsletter archive as a bonus set.

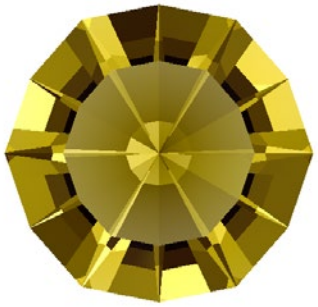
In the next issue we'll discuss gem scales and balances as well as techniques for determining specific gravity.

A Meiji polarizing petrographic compound microscope is a tool used by mineralogists and petrologists to identify crushed grains with complex optics techniques and to analyze thin sections of rocks in transmitted and polarized light. Magnification to 1000x is possible.

New Faceting Diagrams

In a recent design challenge from the Faceting Discord community, we started with one design and passed it to the next desiger several times in a row, until the final design was “done”.

1



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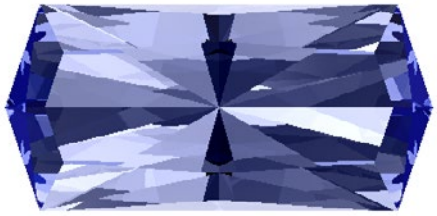

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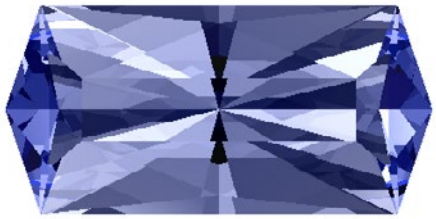
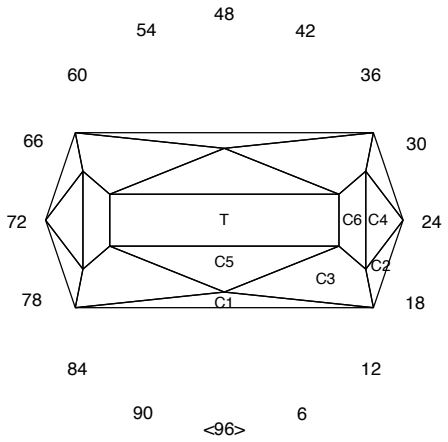
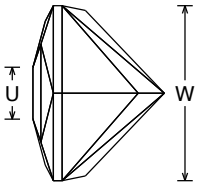


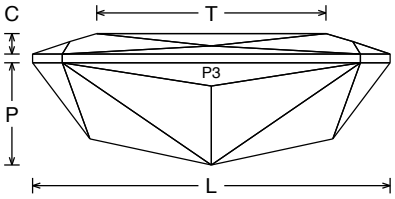
1. *Jeffrey Hill*, started in citrine
2. *Seth Dandridge*, changed shape
3. *Matthew Slade*, crown change
4. *Rime*, changed pavilion
5. *Tony Collins*, added table & crown meets
6. *Marco Volotini*, changes pavilion & material
7. *Michael Holmes*, rounded angles & added new crown tier

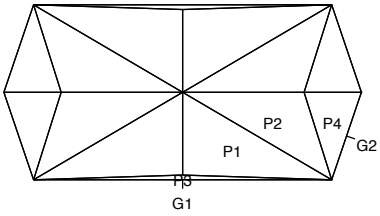
Tag You Are It

Jeffrey Hill, Seth Dandridge,
Matthew Slade, Rime, Marco Volotini,
Tony Collins, Michael Holmes
Discord design "tennis"









Facet Data

Pavilion facets	16	Pavilion tiers	5
Girdle facets	4	Girdle tiers	1
Crown facets	17	Crown tiers	7
Total facets	**37**	Total tiers	13

Size Data

L/W	2.043	P/W	0.584
T/W	1.310	C/W	0.117
U/W	0.297	H/W	0.751
V/W^3	0.706	P/C	5.000

Design Data

Angles for R.I.	1.76
Symmetry	2-fold, mirror
Index gear	96

Comments

Each designer took the previous gem design, and added their own elements
Most designers ever on a single design?

Pavilion

P1	43.90	02-46-50-94	Centerpoint
P2	39.70	04-44-52-92	Meet centerpoint
G1	90.00	96-48	Set stone size
G2	90.00	19-29-67-77	Meet P1
P3	78.50	96-48	Level girdle
P4	54.50	19-29-67-77	Level girdle

Crown

C1	27.50	96-48	Set girdle thickness
C2	32.50	19-29-67-77	"
C3	17.80	01-47-49-95	Meet girdle
C4	18.50	24-72	Meet girdle
C5	15.00	96-48	Meet C1, C3
C6	16.50	24-72	Meet C2, C4
T	0.00	Table	Meet C3, C5 and C6

Resources for Gems, Faceting, Design and Materials

Organizations

US Faceters Guild

Accredited Gemologists Association

American Gem Trade Association

Education & Information

- US Faceters Guild video library: https://usfacetersguild.org/teaching-videos-2/
- Amateur Gemstone Faceting: Faceting books and designs: http://www.facetingbook.com/index.html
- GRS (Gem Research in Switzerland): http://gemresearch.ch/
- Gemological Institute of America (GIA): https://www.gia.edu/
- Gemology Information Videos: Gemlogic - https://www.youtube.com/user/gemlogicorg
- Gemology Project: https://www.gemologyproject.com/
- "Cutting Gemstones: Then and Now" by Justin K Prim: https://youtu.be/plsHQ-94Z8A
- International Gem Society gemology resources: https://www.gemsociety.org/gemology/
- PHYS.Org: For a wide variety of technical news including Optics: https://phys.org/physics-news/optics-photonics/

Faceting Lessons available from:

- Boyd Fox https://www.foxhopjewelry.com/faceting-classes
- Dan Lynch: Contact at dlynchtngems@gmail.com
- Faceters Paradise: http://facetersparadise.com/
- John Bailey: https://facetingacademy.com/
- Justin K Prim: https://www.facetingapprentice.com/
- King Custom Cut Gemstones: https://www.facebook.com/kingscustomcutgemstoness
- Mark Oros: https://www.hashnustones.com/learn-to-facet.html
- Oak & Stone School of American Gemcutting: https://www.oakandstoneschool.com
- Randy Carlson, Huntsville Texas rlcarlson01@gmail.com
- Ron Snelling, Denver Colorado ron.snelling22@icloud.com
- Tom Mitchell: http://www.mitchelljewelrystudio.com

Software for Gemstone Design

- Gem Cut Studio: https://gemcutstudio.com/
- GemCad and GemRay: https://www.gemcad.com/

Facet Rough*

- Dan Lynch Gems: http://DanLynchGems.com/
- Intimate Gems: https://www.facebook.com/minedirect/
- Jeffrey Hill: https://silverhillrockshop.com/collections/facet-rough
- Joe Henley Rough: https://joehenleyrough.com/
- John Garsow: https://johngarsow.com/
- RG Crystals: https://store.rgcrystals.com/
- Milstead Gemstones: https://www.milsteadgemstones.com/
- Mine Direct: www.minedirect.com
- New Era Gems: https://www.neweragems.com/
- Storied Gemstones: http://www.storiedgemstones.com/
- Tom Schneider: https://tmsgems.com/
- Unlimited Gems: https://www.unlimited-gems.com/
- Hashnu Stones & Gems: https://www.hashnustones.com
- Creative Gems – Warren Harris: http://creativegems.com/

Diagrams

- Gemology project: https://www.gemologyproject.com/wiki/index.php?title=Faceting_Designs
- Facet Diagrams: https://www.facetdiagrams.org/
- USFG: https://usfacetersguild.org/faceting-diagrams/
- A few of Tom Herbst's designs: http://www.boghome.com/TomsPages/MyDesigns/index.html

Lapidary Supplies*

- Gearloose, LLC: Faceting Laps and Services, by Jon Rolfe: https://gearloose.co/
- Kingsley North: https://kingsleynorth.com/books.html
- The Rock Peddler (One can purchase Jeff Graham's designs here): https://www.rockpeddler.com/
- Sunstone Japan: https://sunstonejapan.com/tools-other/
- Wood Lap LLC: https://woodlapllc.com/
- Hyper-Edge: https://hyper-edge.com/
- Lightning Lap: https://lightninglap.com/

Lap Resurfacing

- Allan Lindberg: able2allan@gmail.com
- Garrett Simard garretts@impulsegems.com
- Facetron https://facetron.com/product/lap-resurfacing/

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- Renewing Members – Using your email or user ID and password, login to our website. Your membership expiration date and the renewal button can be found at the My Account/Subscriptions page. You will receive an email reminder to renew one week before your membership expires.

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Treasurer: Dan Lynch

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SSC Judge: John Lee
SSC Judge: Casey Trump
SSC Judge: Dan Lynch
SSC Judge: Tom Mitchell
SSC Judge: Daniel Hu
SSC Judge: Pavane Liu
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