

THERE IS MUCH TO CAUSE CONCERN IN today's marketplace: synthetic diamonds grown in a whole new way, under-karating or dangerous elements in our gold, and treatments in colored stones that are undetectable with traditional desk-top gemological instruments. One option, but a costly one, is to send everything to a lab. Certainly lab reports are the norm for stones in the upper price ranges. And lab reports are strongly recommended for stones like ruby, where a lab report based on advanced testing and an experienced eye can support significant differences in value. But there are many stones that pass through labs unnecessarily, when a little knowledge and practice can narrow down those that truly merit the added scrutiny. Here are a few ideas to consider when navigating the field of gemological laboratories.

Forget the old rules: "Too good to be true" and "So ugly it must be natural" – they don't always apply. The rule that applies most often is that you generally get what you pay for. Manufacturers are not necessarily gemologists – check what you buy in mounted colored gemstone jewelry; your reputation depends on it. While you may trust the reputation of your supplier, do you trust the reputations of all of their suppliers? Consider spot checking one sample rather than testing every item. This will help spread the cost over more than one item, especially if you choose carefully which items to test.

WHEN USING A LABORATORY MAKES SENSE

- When the gemstone's identity is unknown.
- When you suspect something is other than what it seems.
- When you cannot tell if it is treated.

Common sense applies here as in any business situation. Inexpensive stones may not appear to merit the cost or time, but consider obtaining a verbal identification, which is less expensive. It is incumbent upon you to protect yourself, your clients, and your reputation by engaging in a regular system of protocol testing. In fact, the AGTA strongly suggests all members develop and practice a system of screening for new or unusual materials and treatments and periodically check their stock.

Lab reports should always be considered for the following stones, depending on their value:

- *Ruby* – to identify how it is treated, the extent of treatment and possibly origin.

- *Untreated sapphire* – experience and a microscope will work in some cases, but not all.
- *Jade* – to detect dyes and polymer impregnation.
- *Yellow to orange sapphire* – to screen for beryllium diffusion, unless it is presumed.
- *Paraiba and cuprian tourmaline* – a surprising number of those presumed to contain copper do not, even though they may look like they do. Some will contain copper without appearing in the expected colors.
- *Black, opaque gems that are beyond the limits of the refractometer.* – These are popular in contemporary designs and can vary widely from black spinel to synthetic moissanite to a variety of synthetic, natural and treated diamonds.

Depending on your market, establish a price range over which stones automatically receive a written lab report. Independent verification can be a strong sales tool, increasing confidence, even for stones that are not commonly treated.

With a minimal investment in testing equipment, some stones should never need to go to an advanced laboratory:

- *Light blue aqua, topaz, synthetic spinel, glass* – with refractometer and Chelsea filter combined, these are readily identified.
- *Synthetic color-change sapphire or imitation alexandrite* – Aunts and grannies bought tons of these in the 1960's.

• *Peridot* – Peridots naturally resist treatment. Only confirm that it is peridot – an accurate RI should suffice.

- *Spinel vs. Garnet* – With spinel prices rocketing, it makes sense to know how to separate them from other gems. UV, Chelsea filter, magnets, or spectra – this is an easy one to learn.
- *Lead glass-filled ruby* – The value is often less than the cost of testing. Look for large air bubbles, blue flash from inclusions, surface-reaching glass fillings. Size should alert you. Any ruby over two carats should be accompanied with a lab report stating the type and possibly the extent of treatment so the durability is known. If not familiar with this material, acquire a sample and learn to identify them; send to a lab for a verbal confirmation when not sure.

These stones are all affordable and commonly encountered. If you buy scrap gold or have older stones on hand, keep those you find, accurately identify and label them, use them for comparisons. Having known comparisons will increase your confidence when testing items not frequently encountered. If it walks like

a duck, talks like a duck... but if it quacks like a duck and looks like a hamster, red flags should be raised.

A lab cannot always tell you what you want to know – or what you want to hear. Some stones give up their secrets, others refuse. While this article is not going to address the issue of origin determination, this is one good example of an area that is not always black and white. The fact is, that most origin determinations are accurate and agreed on among various labs, but the exceptions are well-discussed and the "science" is continually improving. Additionally, the heat treatment of some stones can be difficult to prove conclusively. Many stones, such as aquamarine, are naturally exposed to heat within the earth. Some treatments imitate nature, such as radiation. Many green and blue tourmalines are routinely heated without leaving a diagnostic signature, so treatment is presumed. Even something as simple as the iron staining of chalcedonies can be ambiguous as to when and where the change occurred. Most reputable labs will presume a treatment when it cannot be proven to be natural. Others may give a stone the benefit of the doubt. You should know how your lab calls it.

A lab report should be easily interpreted. If unclear about any wording, ask the lab for clarification.

Some reports can tell you much in what they do not state. While there are "labs" that are merely fronts for promoting sales, there are many newer but reputable labs meeting the demand for better information about the latest treatments. Confirm the reputation of any lab you are not familiar with. One way to do this is to confirm the gemologists' credentials and the lab's equipment. Make sure they are experienced and equipped to support the conclusions stated on the report.

New types of synthetics, other than diamond, are not being developed at the rate they once were and are not commonly encountered. Those that are easily and affordably grown are well-known, such as ruby, sapphire, emerald, spinel, and amethyst. Synthetic white and yellow sapphire, although common and well-known, can be difficult to identify when there are no tell-tale inclusions. Newer synthetics can be convincing but are often too costly to grow to allow for profitable fraud. Further, many synthetics or even natural stones will imitate materials other than what they are. For example, an apatite or a newer color of synthetic beryl can imitate Paraiba tourmaline, but are easily identified as what they are with basic testing. Careful testing with the refractometer will alert

you to many of these imitations and look-alikes.

What has proliferated in recent years are treatments. While natural, untreated stones have gained in popularity and recognition, at the other end of the quality spectrum, treatments are making previously unusable grades of gems attractive and usable for jewelry.

The term "gem grade" or "jewelry grade" has altered with designers featuring emeralds, rubies, sapphires and diamonds with obvious – but interesting – inclusions, often with their natural form preserved. Many of these are natural, but when it is possible, be

aware that fillings, dyes, coatings, and clarity-enhancing resins can be applied. Never assume that if it looks natural it must be.

There are a few treatments that tend to fly under the radar of even experienced gemologists. Once only considered a treatment for emerald, oiling has become part of the finishing process for many gems, especially if the occasional fissure can be minimized or masked. Many clients are surprised to find that their unheated alexandrite, ruby or sapphire contains oil. Any gemstone with fine, surface-reaching fissures can be treated this way. Once cleaned, such stones can appear of lower clarity. Another treatment to be aware of are coatings.

While mystic topaz is easy to recognize, a similar

process can make colorless quartz look like amethyst, minimize the color on a yellowish diamond, improve the color of a tanzanite, or turn any light colored gemstone to a different color. They can even create the illusion of optical effects or more than one color. Learn to recognize the metallic reflection or look for areas where the coating has chipped or scratched off. These coatings are almost always applied to just the pavilion, as a result they are more difficult to check on mounted gems.

Make a practice of reviewing the Gemstone Enhancement Manual (GEM) on the AGTA website or AGTA Source Directory. This is a handy reference for many potential treatments and can serve as a quick reference of what you might look for. This is periodically updated.

Besides providing a sales tool, lab testing can help you to learn. You may only need to send in one lead glass-filled ruby in order to know what to look for next time, and making sure your "Paraiba tourmaline" contains copper can save your reputation. But knowing what tests are still reliable to perform in-house can save time and money while boosting confidence in your business. 🌈 By Cara Williams, FGA

THE ABC's OF LAB'S

TO SUBMIT OR NOT SUBMIT

