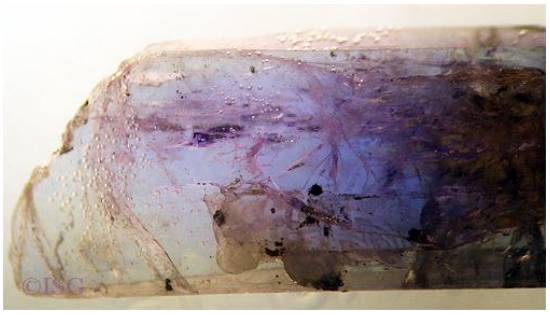
a publication of the International School of Gemology 1.November.2012

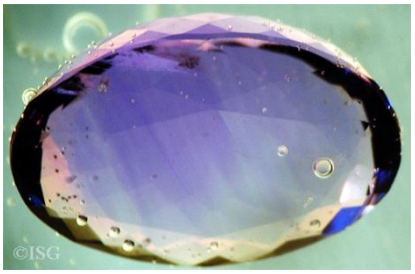
Tanzanite Trepidation

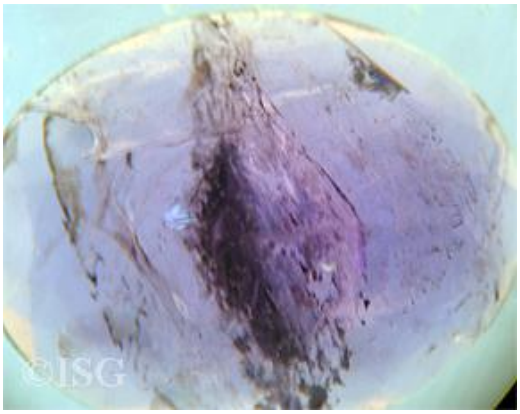
The sudden surge of large quantities of previously rare and expensive gemstones on the market always gives cause for investigation here in the ISG office, and tanzanite is no different. As always, we believe the only way to accurately test the market conditions of any gemstone is to spend significant resources to procure specimens from the open market, and from a variety of locations and dealers. Allowing a select group of dealers to submit stones for a test is always a recipe for failure as this allows dealers to control the outcome of a study. As such, the ISG always procures our study specimens on the open market, as we have done with tanzanite. Here is what we found…a great deal of Tanzanite Trepidation regarding all of this new and inexpensive material that has suddenly shown up on the market in the last couple of years.

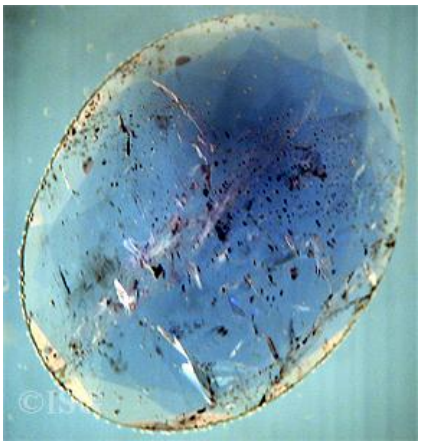


Our previous research on this topic turned up prima facie evidence that someone out there (China or Thailand) is color infusing zoisite using the same method that the ISG uncovered being done to tourmaline. At left you can see an image from our previous research on this issue.

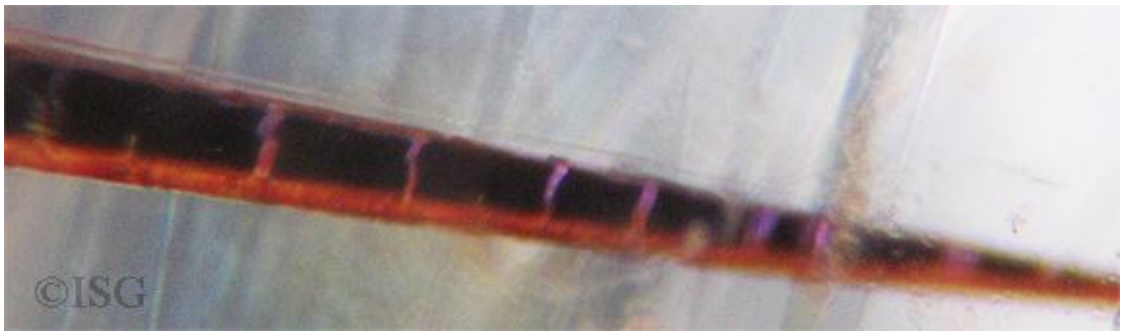
Of particular interest at the time was that the coloring was concentrated around fissures and surface breaking features of various types. Through a simple Dixie™ cup immersion cell we demonstrated how this color infusion process can be identified in some of the lesser quality stones that did not take the treatment well. Those images are also below.





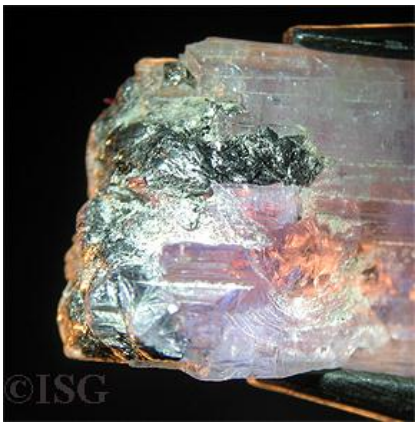


Based on our research methods and techniques used to expose the Tibet andesine fraud, we also were able to identify tubes of color infusion material in several of the rough tanzanite crystals we obtained, an example from that research is below.



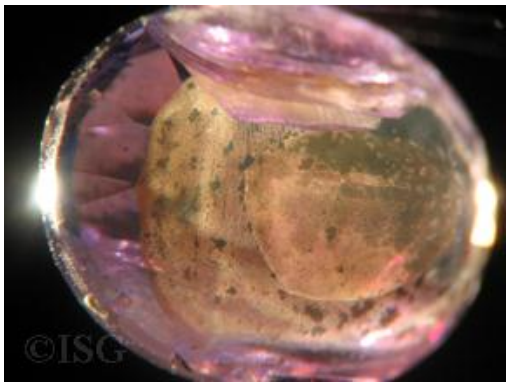
Recently, however we have uncovered a different type of treatment being done to zoisite to create tanzanites. And while we do not yet fully understand the process being done, the results are quite remarkable.

Rather than using a simple color infusion process, it appears that this new process is using a color infusion material that itself has optical properties that emulate a tanzanite. By infusing a previously colorless or perhaps light yellow zoisite with this optical material the cookers have been able to achieve a level of treatment that surpasses anything we have yet seen on the market. The reaction to gemological testing at first look very closely emulates the reaction of natural tanzanite due to what we believe is the optical property of this treatment material.



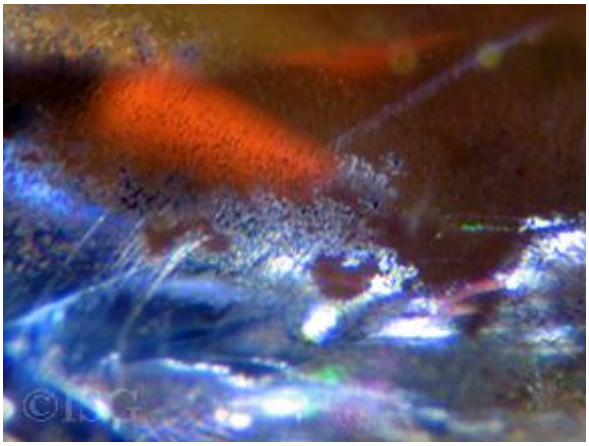
We first noticed a change in the tanzanite treatment when we started finding melted metal on the surface of certain rough crystals, much the same as we previously found on Tibet andesine. This proved to be annealed graphite, as previously found to be used in treatment crucibles. A specimen example is seen at left. In virtually all of these cases the color of the tanzanite appeared to be somewhat neon in color with reactions to the Chelsea filter and dichroscope appearing skewed to what we know to be natural based on our control specimens from World Gem Society member dealers who are Tanzanite One Siteholders.

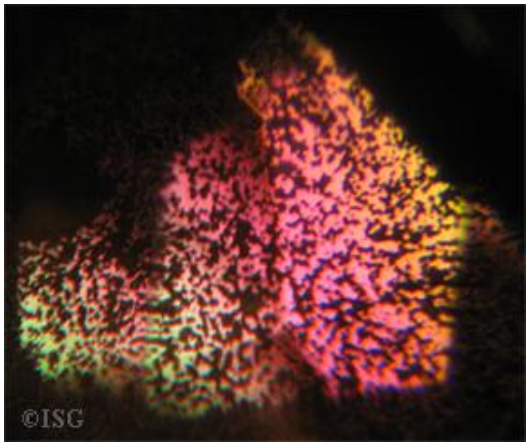
Among our faceted study group we found a specimen with a major fracture that was filled with a very strange material that appeared to be deteriorated as seen in the image below.



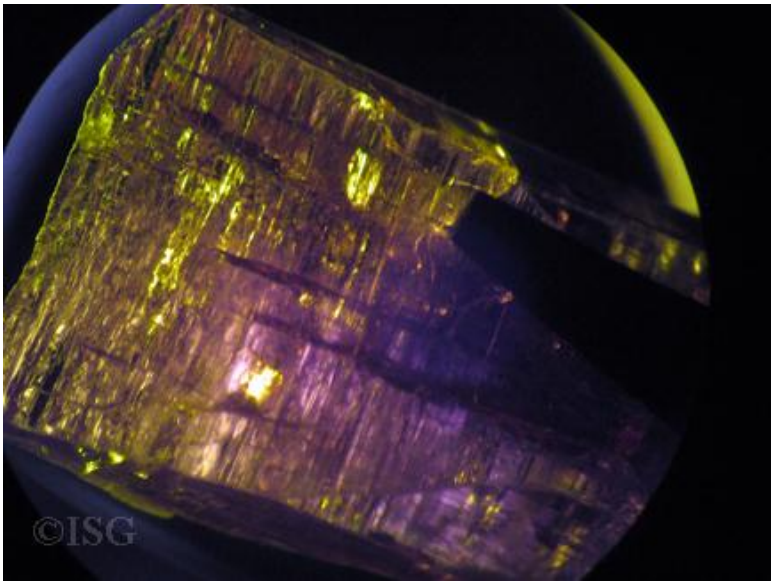
At first glance at 10x it appears that this is simply a foreign substance in this large plane fracture of this stone. However, on closer inspection with our Meiji Techno microscope, fluorescent fiber optic and halogen fiber optic lights we were able to identify this material as having an iridescent optical quality whose colors changed based on the different light source used. Below left you see this material under fluorescent light that is now a blue color, below right you see this same material under halogen light that is now neon purple and yellow colors.

While the apparent deterioration of this material was quite obvious at 10x. the same material viewed in the specific light sources produced a remarkably different set of colors that were predictable and repeatable across the face of this material.

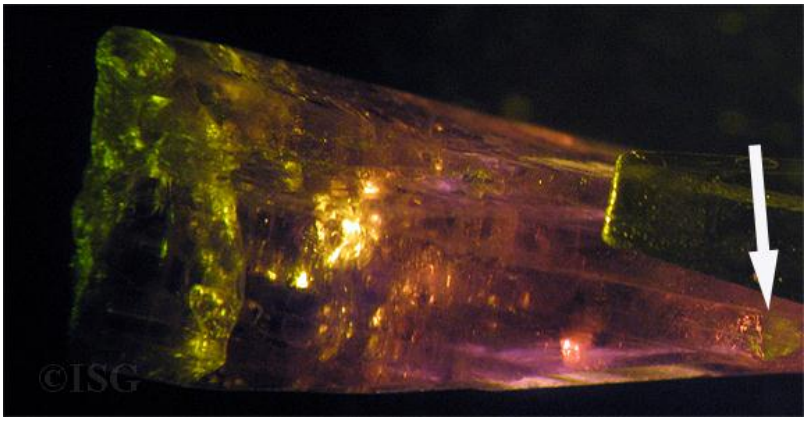


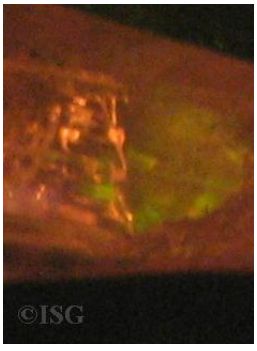


This condition, of course, needed confirmation as to whether or not this was some sort of optical anomaly of this stone or if this was indeed a new type of treatment being done to zoisite. To this end we obtained new specimens from the open market, particularly rough tanzanite crystals (very expensive) since our research has shown that most of these treatments are done on rough crystals rather than faceted gemstones due to the "fail rate" of the treatment. The cookers don't want to incur the cost of cutting gemstones that will not treat properly. Plus, a larger treated crystal will allow for a larger cut gemstone that can remove the areas that don't treat well and expose the treatment. As a result, the vast majority of treatments we find are done on rough crystals, as was the case with these zoisite.



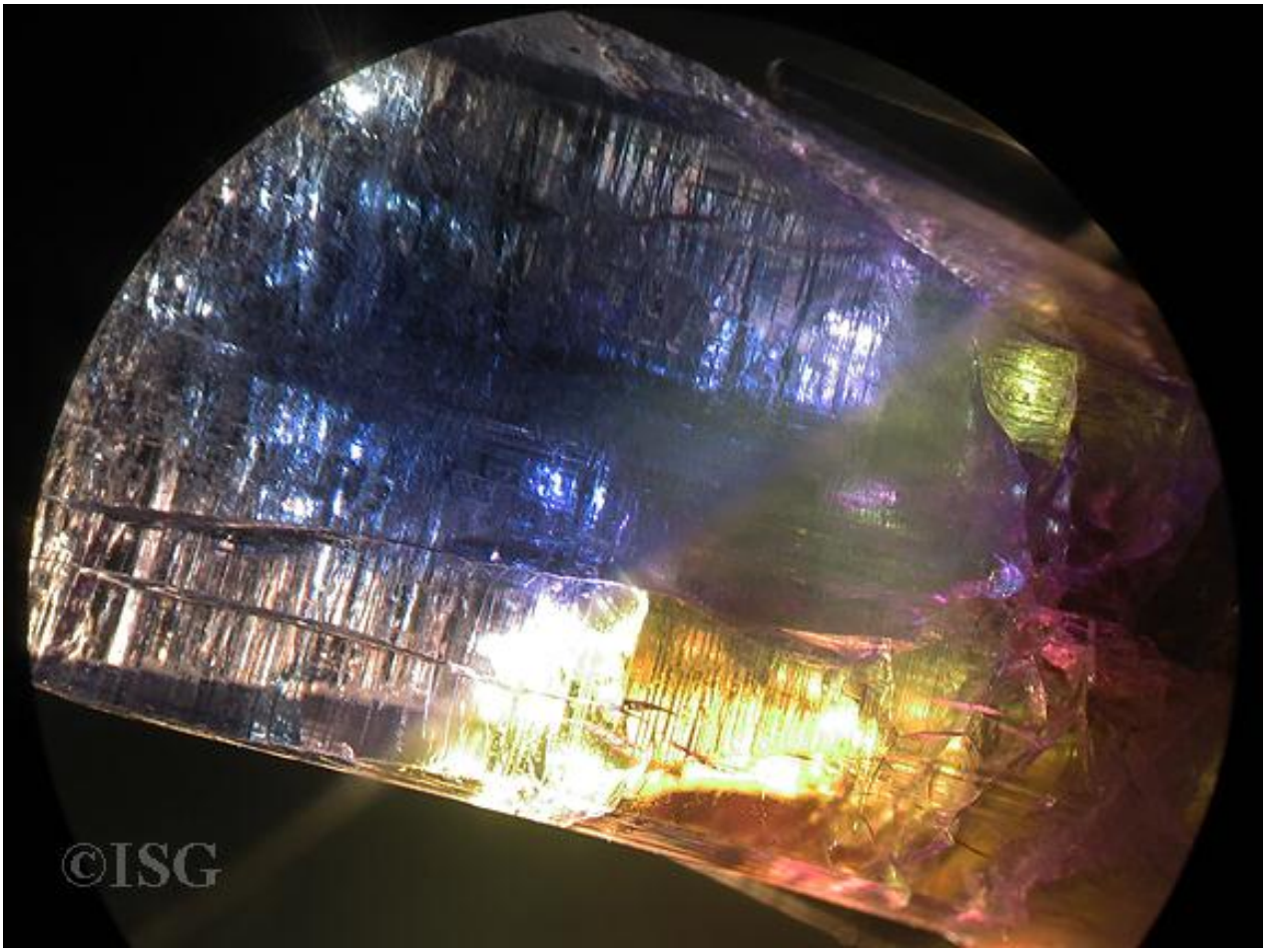
Our first look was with a suspect tanzanite crystal using a Chelsea filter. Having founded the Caribbean Gemological Institute during the Caribbean jewelry tanzanite craze, I have had the opportunity to see thousands of tanzanites both rough and faceted using a variety of instruments. At left you see a tanzanite crystal through a Chelsea filter that is very unusual. The purple color is concentrated around the fissures of the stone, with a very strong yellow reaction that is itself very unusual for tanzanite. When the stone was rotated the situation became more pronounced as the Chelsea filter reaction was totally anomalous as seen below. The arrow points to what appears to be a hole in the purple color showing the background yellow. The smaller image below right is a close up of this showing what appears to be a hole in the pinkish purple material showing yellow color through it. Clearly indicative of some type of material inside this crystal, and not of natural origin when viewed through the Chelsea filter.





The final test that exposed the condition of this tanzanite crystal was quite unexpected and profound. This crystal, viewed through a London Dichroscope below, clearly demonstrated that something very strange has taken place with this crystal. This image clearly exhibits four separate colors coming from this tanzanite crystal, with the blue and purple coming from the fractures and fissures, and the crystal itself offering a colorless and strong yellow reaction. One direction of viewing through a London Dichroscope, but producing four distinct colors.

Based on our finding of the faceted tanzanite with iridescent material with optical properties that are obviously artificial, and the image of a tanzanite crystal showing four colors in a dichroscope, we have to conclude that something artificial is being done to zoisite to create a tanzanite appearing result. Precisely what is being done, we do not know. That it is being done, we believe there is little question left on that issue. The image below speaks for itself.



Conclusion:

What is most remarkable about this find is that the cookers have stepped up their game. They are not simply infusing colors, they have elevated their ability to actually infuse material with specific optical properties.

To the cookers responsible: You folks are brilliant! We need more tanzanite on the market, both natural and treated. But we need your treated material to be properly disclosed because failure to do so is destroying the entire tanzanite market for everyone.

Disclose your treatments! Otherwise you will eventually cause great damage to the market for tanzanite just as you did for Ruby, Paraiba Tourmaline and Oregon Sunstone.

The ISG will not stand down in our efforts to expose the selling of undisclosed treated gemstones.

That is our word to consumers, the cookers and to the industry.

Robert James
President, International School of Gemology