Gem Market News

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Lead Glass Filled/Repaired Rubies

In November 2004, a large number of rubies exhibiting uncommon features were submitted to the AIGS laboratory in Bangkok for testing. During a two month period, more than 200 of these rubies were analyzed in the laboratory. Lead was detected in their fissures and cavities. Between September and December 2004, a total of 244 of these rubies ranging in size from 3 to 97 carats were examined at the AIGS laboratory including 12 stones over 25 carats. During 2005, these treated stones kept the AIGS laboratory busy, though much fewer stones are encountered these days.

Flash effect in lead glass treated ruby.
All photos courtesy of Vincent Pardieu, AIGS Gem Testing Center.

By Vincent Pardieu, GGA, GG
Asian Institute of Gemological Sciences
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Surprised by the large number of stones suddenly appearing on the Bangkok market, the AIGS laboratory has decided to give priority to the study of these stones and began to research this new product.

Following several weeks of enquiry, we found that the treatment was being performed in three different cities in Thailand: Chantaburi, Bangkok and Mae Sot. AIGS Gemological laboratory then published an initial study on this treatment available at www.aigslaboratory.com.

After the release of this initial study, several other companies have started their own experiments. The composition of the glass used for the

continued on page 4

In This Issue

Zultanite—Hidden Treasure from Turkey

Color change zultanite. Photos by Robert Weldon.

Few gems exhibit the rare phenomenon of color change. The leader in this collector group is alexandrite, named after the Russian czar, Alexander. Now, a new color change gem has emerged, named after the legendary Sultans who founded the Ottoman Empire in Anatolia, Turkey. Found only in one location, this color change gem is rich in folklore and still affordable to collectors.

By: Richard B. Drucker, GG

History

Diaspore has been known as a mineral since the late 1960s. However, the first gem quality crystals appeared in 1994 from a small group of Turkish miners. A visitor was given some crystals which he took to the United States to show some jewelers and gemologists. The GIA lab examined the crystals and declared this a new discovery since gem quality crystals had not been reported until then.

From 1994 to 1999, a few articles appeared on the diaspore. The original Turkish man attempted to sell and market the material but mostly without success. Mostly poor stones cut in the Far East were available. This person allegedly became involved in criminal activities and the diaspore story faded. That is where another Turkish man by the name of

Murat Akgun became involved. Thinking he was helping a fellow Turk in need, he became involved with the gem and the other Turk, investing great sums of money. He even went to Turkey to live for six months while researching the gem, the mine, and how to legally export the gems. Approximately four years later, Akgun found an investor and in 2005, Zultanite Gems, LLC was formed. Permits for continued mining and exporting followed shortly thereafter.

Color and Zultanite

First time observers of zultanite may not get the full appreciation of the colors. Admittedly, when we viewed these gems in Tucson, our first impression was that the colors seemed a bit "washed out." As such, our discussion led to the term "muddy" in appearance. Akgun sends a full explanation letter to jewelers to help them to understand what to expect in colors and how to properly view the gems to maximize their potential. He states that initially jewelers may think that "the colors are too subtle leaving the stones almost gray or the color-change is brownish champagne.

When a parcel paper is first opened, it is usually in mixed lighting and Akgun explains that this diaspore is very sensitive to different light sources. Mixed lighting will not act favorably to his gems. Also, smaller stones may not show the color change as well. All zultanite shows the green color easily. The color change is more tricky to observe. For stones under 3 carats, low incandescent light will show more of a champagne color. The more intense color change will be seen in stones over 3 carats.

The quality of the light is also a factor. For years we have learned how gems will look different in various parts of the hemisphere. We are also taught that north daylight is the best light for viewing gems. The time of day, the weather, smog, humidity all affect the quality of light. Humid conditions will wash out the colors. Crisp air will intensify the colors.

With zultanite, daylight or fluorescent light will show the green colors. Candlelight or incandescent light will show the champagne or raspberry pink coloration with yellow or red flashes. Rarely, the color change may be a purplish color. However, this is where it gets tricky. Incandescent lights have varying amounts of red wavelengths and this will determine how well the color change is seen. Some may have blue wavelengths which will show minimal color change. Since lighting is important to color change gems, the zultanite company is now developing a light box to standardize conditions. While we agree that this is a much needed step in the right direction to help retailers exhibit these gems, we also realize that once purchased, the consumer would not have the same access to these lighting conditions.

The Diaspore Dilemma

In my gem lecture series this past February at the Tucson Gem Show, I remarked hastily about diaspore. My comments stemmed from the fact that diaspore has gained little respect in our industry over the years. The well-known "A" and "B" charts that are distributed to every student taking gemology classes at GIA are absent of diaspore. The A chart contains the common gems and the B chart has the lesser known gems. Certainly if a gem is on neither, chances of it becoming an important jewelry staple are slim.

When I returned from the Tucson show, I continued to search for diaspore information with little success. Diaspore is not in my version of Liddicoat's *Handbook of Gem Identification (12th Edition, second printing),* though it may be listed in more recent editions. I then went to the ultimate in gem reference materials, *Gems* by Webster (a 1,000 page reference book on gems). It was also missing, but again I realize that this book was published long before this new diaspore discovery. Data is not easily found on this gem, and that is a dilemma for this gem. Until mainstream publications recognize diaspore, marketing will be a challenge. But a gem has to start somewhere. Look at tanzanite, a gem still in its infancy, and already it has climbed the charts to be an alternate December birthstone.

Pricing Color Change Diaspore

Here at *The Guide,* we are the reporters of markets, not the makers of markets. As of now, there is one distributor and one price maker. As the sole owner of the mine, they have the luxury of setting the initial selling price. From there, the market will then determine if that price is too high or too low based on the volume of sales achieved.

Bear in mind that rarity does not automatically justify or translate into a very high price. A great 'supply and demand and their effect on price' story can be found in the collector gem benitoite. When benitoite was in very limited supply, prices were not that expensive. Most of the beautiful blue colors sold for only a few hundred dollars per carat, yet the finest rivaled some sapphires. Then, mining activity increased, trade coverage increased, and the better

supply helped to increase popularity. Demand went up and so did the price. Soon, benitoite became a part of *The Guide*. However, the current state of benitoite is such that gems are again rarely seen and this once popular gem may soon disappear from our pricing pages.

Current pricing of zultanite seems reasonable, but again, the market will ultimately determine the price. The owners must keep in mind that rarity may not dictate price. Some mineral specimens are very rare and very expensive. Some are rare and not expensive. Beauty and acceptance are the keys to the success of any gemstone or mineral specimen. ◆

The following price chart has been supplied by Zutanite, Inc.

	Price per carat
1.00 to 1.99	$200
2.00 to 2.99	$300
3.00 to 4.99	$400
5.00 to 6.99	$600
7.00 to 9.99	$800
10.00 and larger	Priced individually

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Zultanite Properties	
Chemical formula:	ALO(OH)
Crystal Structure:	Orthorhombic
Refractive Index:	1.74-1.77
Specific Gravity:	3.4
Color:	Color change from light green to purplish pink or brownish pink
Clarity:	TYPE II, usually eye-clean
Cut:	Most standard shapes available plus custom cuts
Carat Weight:	Over 5 carats is rare
Species:	Diaspore
Origin:	Anatolia, Turkey
Enhancements:	None
Care:	No heat, no ultrasonic

More Scientific Facts on Color Perception

By Murat Akgun

The Purkinje Shift is a term that describes the effect of light on colors in the human eye. In the 19th Century, Bohemian physiologist Johannes Evangelista von Purkinje noticed one evening that the colors of an Oriental rug changed as dusk settled, and that some of the colors seemed to grow brighter even as the room darkened. His research determined that in most conditions, including low-light scenarios, certain colors (blues, greens, yellows) were brighter to the eye, while others (red, oranges) were dim by comparison.

Dimmer light fires more of the blue wave length which means that blues will seem more vivid, while more intense light will fire more of the red wave lengths which makes red more vivid. So: blue sapphires are better seen in dimmer light and red rubies in brighter light. Zultanite, having a Refractive Index (RI) between that of Emerald and Ruby, shows its green coloration best in bright, indirect light and the raspberry pink coloration best under dim incandescent light with warmer tones.

A second factor is that different eye coloration (blue, brown, hazel, etc.) significantly sees color in differing spectral hues. Blue eyes can differentiate 30%+ more hues than dark color eyes. Therefore, when a seller in Asia with dark eyes picks out a gem and describes its hue, a buyer in a European country who might have lighter or blue eyes will perceive a different hue. Add in the retail buyer and the difference in perception of color can be even further from the original described hue.

A third factor is atmospheric condition with hot, high, dry and sunny locations (such as Jaipur, India) showing intense coloration; and cool, low, humid and cloudy locations (such as the coast of Thailand) where coloration will seem darker and drabber.

Lastly, another factor to color is that a camera 'sees' light and color as static and computer monitors have different settings and basic color differences. This does not allow the color of a gem such as zultanite to be seen as 'true.' Many color-change gems also will show part of the color change in a photograph if the photographer is not careful to filter out extraneous light sources.