

Fall G&G Outlines Diamond Cut Grading System

Summer Issue Addresses Treatment Disclosure, Chatham Synthetic Diamonds and Synthetic Amethyst

By Russell Shor

The Fall 2004 *Gems & Gemology* will feature an extensive update on GIA's 15-year study of the effects of proportions on the cut appearance and quality of a round brilliant diamond. This research provides the foundation for a diamond cut grading system that will incorporate the components of brightness, fire, scintillation, polish and symmetry, as well as weight and durability factors, into a single overall cut grade for round brilliants.

As the article relates, GIA researchers began the study by using a computer to model the way in which light behaves in a round brilliant cut diamond, then refined their results by recording 70,000 human observations of diamonds with a wide variety of proportion combinations.

The researchers also developed a standard viewing environment that mimics common trade environments, as well as reference software that will enable users of the GIA cut grading system to estimate the overall cut grade of a particular diamond from its proportions.

The cut grading system developed on the basis of these findings will allow for differences in personal and geographic preferences, thus providing diamond manufacturers and retailers much more flexibility.

Meanwhile, the Summer 2004 issue of *Gems & Gemology* offers a comprehensive review of U.S. legal requirements regarding gem treatment disclosure. The article, by *G&G* Managing Editor Thomas Overton, begins by recounting the Federal Trade Commission's efforts to establish a uniform set of guidelines for the industry. The first standards were adopted in the early decades of the 1900s, but they made no provision for gem treatments. Although there were other efforts to update trade practice rules throughout the first half of the 20th century, disclosure of treatments was left out.

The current FTC Guides require disclosure for any treatment that is not permanent, that requires special care, and/or has a significant effect on the stone's value. Despite some

misconceptions in the trade, the FTC Guides do carry the force of law. The FTC may, on its own, go directly to federal court. Each violation of an FTC rule can cost up to \$11,000 in fines.

The article reviews a number of cases where jewelers have gotten into trouble for failure to disclose gemstone treatments. It also features a chart that lists commonly encountered enhancements of gemstones and suggests language for disclosing them at the retail level.

The Summer issue also includes the first in-depth look at a new line of synthetic colored diamonds (yellow, blue, green and pink) being distributed by Chatham Created Gems. It is co-authored by GIA Director of Research James Shigley and GIA researchers.

Although the colors of some of these synthetic diamonds are lighter and more natural looking than others, the Chatham synthetics have many of the same identifying characteristics as those produced by other HPHT (high pressure/high temperature) synthetic diamond manufacturers, such as metallic flux inclusions and distinctive zoning and growth patterns. Testing with advanced instrumentation provides additional evidence of their laboratory origin.

Another lab-created gem, synthetic amethyst, has long vexed the trade with its difficulty in detection. The authors of the third article in this issue, Dr. Vladimir Balitsky and colleagues, examined 238 samples to determine the reliability of one widely accepted indicator, the 3543 cm⁻¹ absorption band that is observed with infrared spectroscopy. They found that while this band may be considered indicative of possible synthetic origin, it cannot be used as proof of synthetic amethyst, and additional testing is required.

Lab Notes

The GIA Gem Laboratory reports on an extraordinary 16.02-carat cat's-eye alexandrite, with a sharp eye caused by very fine needles. The transparent to semi-transparent oval cut showed a distinct color change from dark bluish

green in fluorescent light to very dark reddish purple in incandescent light.

Microscopic examination of a 1.02-carat "pink" round brilliant diamond in the East Coast laboratory revealed evidence of both pink dye and, through the flash-effect colors, one of the substances used for clarity enhancement.

The East Coast laboratory was also asked to identify a large, dark yellowish green modified shield mixed cut set in a white metal ring. The ring had been purchased at an auction, with the center stone represented as peridot. Testing proved the material was high-R.I. glass.

The West Coast laboratory encountered two unusual cat's-eye cabochons, weighing 4.47 carats and 6.56 carats. Both stones had a broad, intense green chatoyant band. Although the results of standard gemological testing were inconclusive, Raman analysis was used to help identify the stones as demantoid garnets.

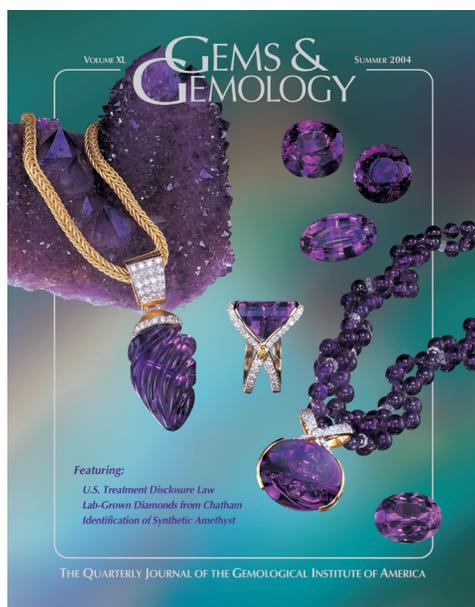
Gem News International

Some significant finds of gem-quality amethyst have occurred in eastern San Bernardino County, California, in the last three years. Production thus far has consisted of 500 loose crystals up to about 9 mm long and 1 cm wide. A rare find of green petrified wood from Holbrook, Arizona, and scapolite from a new discovery in Mozambique, were on hand in Tucson.

Another Gem News International report summarizes U.S. patents and patent applications for methods of diamond "fingerprinting" that have been awarded or published since January 2001. These techniques, which record a diamond's internal optical characteristics, could prove valuable in combating the illicit trade in African "conflict" diamonds.

The section also features a review of tourmaline and other gem production from the Warner Springs pegmatite district in San Diego County, California, as well as the latest conference reports.

The Summer issue concludes with Book Reviews and a special 12-page Gemological Abstracts section, which summarizes recent gem and jewelry articles published around the world.



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