09 Letters

MORE ON D-to-Z DIAMOND COLOR GRADING

I enjoyed reading "Color Grading 'D-to-Z' Diamonds at the GIA Laboratory" (Winter 2008, pp. 296–321). It is always great to learn how things are done at the GIA lab. Although I feel it would have been better to present and discuss much of this information at least eight years ago, it is nonetheless good to see the lab publish its standards for policy, procedures, and equipment.

That said, I write to say how strongly I disagree with the authors' conclusion that "a standard light source for diamond color grading should have key characteristics of daylight, *including a UV component*" (p. 320, italics mine). In their introduction, the authors stress the impact of color grade on the price of diamonds, and they go on to review the development of the GIA system and the various modifications that have occurred since the mid-1950s. Then they admit that, "at times, the resulting adjustments *have appeared to conflict with earlier statements*" (p. 296, italics mine). As the authors point out, all of the early literature, including that from GIA, indicated that the "true bodycolor" of a diamond should be determined in light that is similar to indirect northern daylight but with a minimum of UV radiation.

I began working at the GIA lab (on San Vicente Blvd. in Los Angeles) in 1975, shortly after GIA Gem Instruments introduced the new DiamondLite with Verilux lamps, which had "a new coating that minimized UV emission as compared to similar lamps. . . ." (p. 302). And yes, as a GIA lab employee for the next three years, I "often promoted the minimized UV emission in these lamps" (p. 302), generally to diamond dealers who had submitted stones for grading and thought the color grade should have been higher. If the stone had medium blue or stronger fluorescence, I would explain that it probably appeared to have a higher color grade in the lighting environment the dealer used because of UV emission, and that we, at the GIA lab, were using specially developed, standardized lamps with a minimum of UV emissions to determine each diamond's true bodycolor.

When I became aware, in 1995, that the Verilux lamps in the GIA DiamondLite emitted a good deal of UV radiation, I assumed that the lamps had undergone a change in manufacture, and were not the same as those used in 1974 (see T. E. Tashey, "The effect of fluorescence on the color grading and appearance of white and off-white diamonds," *The Professional Gemologist*, Vol. 3, No. 1, 2000, pp. 5–7). The authors seem to disagree: "Indeed, the lamps chosen in the '70s had a small, *but not negligible*, UV component. And we continue to see this UV component in lamps chosen since then" (p. 306, italics mine). Not negligible, indeed. If the authors are correct—that the Verilux lamps, even the original ones from 1974, have such a strong UV component—I would have to conclude that a lot of fluorescent diamonds were misgraded between 1974 and 2000.

The authors emphasize that millions of diamonds (fluorescent and not) have been graded under the procedures they describe and that it would be wrong to change grades, based on new procedures, for all of the possible resubmissions of previously graded diamonds. Personally, I don't know. The authors emphasize how careful the graders are and how procedures are designed to be repeatable so that the lab will always get the correct color grade of a diamond, and how their "research has shown that skilled graders reach a point of visual tolerance (i.e. the range of repeatability) . . . at slightly less than one-fifth of a grade at best" (p. 308). Such repeatable consistency for a lab would be commendable. And yet a strongly fluorescent diamond, which in my experience (see Tashey, 2000) can have its apparent color lowered by two to four letter grades when using a UV filter (see below) in the standard viewing environment used by GIA, is not considered to be of any significance? Is this lower grade not the *true bodycolor* of the diamond, which all historical literature has advised should be used to determine the real value of a diamond?

The authors acknowledge that the blue fluorescence of some diamonds can alter their appearance in certain lighting environments by canceling out a portion of their yellow bodycolor. They propose to standardize the amount of UV emissions for the effective color grading of diamonds. They do this by using a standard lamp with a standard level of UV emission (though this level may decay over time) and defining a standard viewing distance:

> For consistency, we use a distance of 8–10 in. (20–25 cm) between the lamps and the diamond. Bringing a fluorescent diamond closer to the lamps may result in a stronger fluorescent impact. For instance, a yellow diamond with strong blue fluorescence could appear less yellow (i.e., to have a higher color grade) as it gets closer to the lamps. Moving the same diamond more than 10 in. from the lamps will have the opposite effect; that is, the color will appear more yellow (a lower color grade) (p. 304).

While this is indeed a standard, is it the best possible standard for the evaluation of a diamond's color grade?

I personally think not, considering the high amount of UV emission in this proposed standard lighting environment, unless one also includes on the grading report a letter grade determined in a similar standard viewing environment with no UV component.

I was shocked when I first discovered in 1995, by shielding the Verilux lamps in the GIA DiamondLite with a clear Makrolon plastic film (which acts as a UV filter), that stones with very strong blue fluorescence could appear three or four letter grades lower in color. Similarly, after sharing my findings and offering others some Makrolon film for their own experiments, several of my colleagues and former associates were as shocked as I was to see these dramatic color shifts in strongly fluorescent diamonds. I believe this to be a very significant issue in the accurate color grading of D-to-Z diamonds, and I cannot accept GIA's recommendation for their standard viewing environment.

As a consultant to the World Gemological Institute in Israel from 2005 to 2007, I oversaw that lab's transition from the GIA DiamondLite (DL) to the GIA DiamondDock (DD) as the standard environment for color grading. During the transition, over a three- to four-week period, all stones were observed in both environments to check for any discrepancies. As a UV filter was used with the DL to grade diamonds with medium or stronger blue UV fluorescence, we also used it with the DD. Because the distance from the lamp to the grading tray is greater in the DD than in the DL, one can imagine that the UV component might be somewhat reduced. We found that stones with medium or stronger blue fluorescence had the same color in the DL and the DD when viewed without a UV filter. They shifted to the same lower grades when examined with the filter. It should be noted that the Verilux lamps in the DD are thicker and have more than twice the wattage of the lamps in the DL.

I think the GIA DiamondDock has made significant improvements over the DiamondLite, and, except for the issue of the high UV emission from its Verilux lamps, it makes a very good standard viewing environment for diamond color grading. It is larger and more grader friendly; it has a neutral gray background for better color discrimination and less grader eye fatigue; the distance from the lamps to the grading shelf is greater (from approximately 5 inches in the DL to approximately 7 inches in the DD); and it provides a vastly improved grading tray. This is a large, very white, nonfluorescent plastic, pivotable, V-shaped tray that will hold a complete master set of 10 to 12 stones and still have plenty of working distance between stones for accurate color discrimination.

I'll conclude with the description of a diamond my laboratory examined in October 2008: a 0.89 ct marquise brilliant with very strong blue fluorescence. In the DL without a UV filter, the stone was graded table-down as a high D. In the face-up position, compared to the face-up appearance of a 1.0 ct E master stone, the E master looked very slightly yellow. But with the UV filter in place, when graded table-down, the color grade shifted to a low H. In the face-up position, because the diamond was a marquise brilliant (a fancy cut that will generally show more color face-up than a round brilliant of the same size and bodycolor), it was very slightly less yellow than a 1.0 ct J master in its face-up position, and considerably more yellow than the 1.0 ct H master. The diamond was also examined in a DiamondLite modified by Dazor Inc. to use LED lighting. We found that the diamond appeared the same in this LED lighting environment, in both the face-up and table-down positions, as it did in the DiamondLite with a UV filter.

How is such a diamond to be described and graded with consistency and accuracy? I have concluded that the best procedure for strongly fluorescent diamonds, going forward, would be to issue a report listing two different color grades in two different standard lighting environments, both similar to natural daylight, but one with and one without a UV component (of course, natural daylight has a UV component, but the strength of that component differs significantly from direct sunlight to northern, indirect daylight). This additional information would be useful to the owners of strong blue fluorescent diamonds, alerting them to the fact that the diamond may look different in different lighting environments.

My lab graded the 0.89 ct marquise-cut diamond as G color, as in our opinion this was a fair compromise. I wonder how the GIA Lab would grade it. How is this diamond, and how are other strongly fluorescent diamonds, to be valued? Based on the higher color grade, with a large deduction for the strong blue fluorescence? Or based on the lower color grade, with a large premium for the strong blue fluorescence? Personally I prefer, and professionally I practice, the latter.

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MORE ON THE WITTELSBACH BLUE

In our recent article on the Wittelsbach Blue (Winter 2008, pp. 348–363), we noted that despite "exhaustive efforts" we had been unable to locate the "Dr. Klaus Schneider" whose research was the basis for much of K. de Smet's book, *The Great Blue Diamond* (1963). This work has been used as an important source for historical information on the Wittelsbach Blue by many authors (e.g., Tillander, 1965, 1996; Heiniger, 1974; Legrand, 1980; Khalidi, 1999; Balfour, 2001; Bari and Sautter, 2001; Bharadwaj, 2002; Manutchehr-Danai, 2005; Erichsen, 2006; Christie's, 2008). During our research, however, we discovered that many of the statements therein had no archival basis, and we sought to contact Schneider or at least review his records in hopes of clarifying these inconsistencies. Although we had met with no success at the time the *G&G* article went to press, we wish to report that further work has finally cleared up this mystery.