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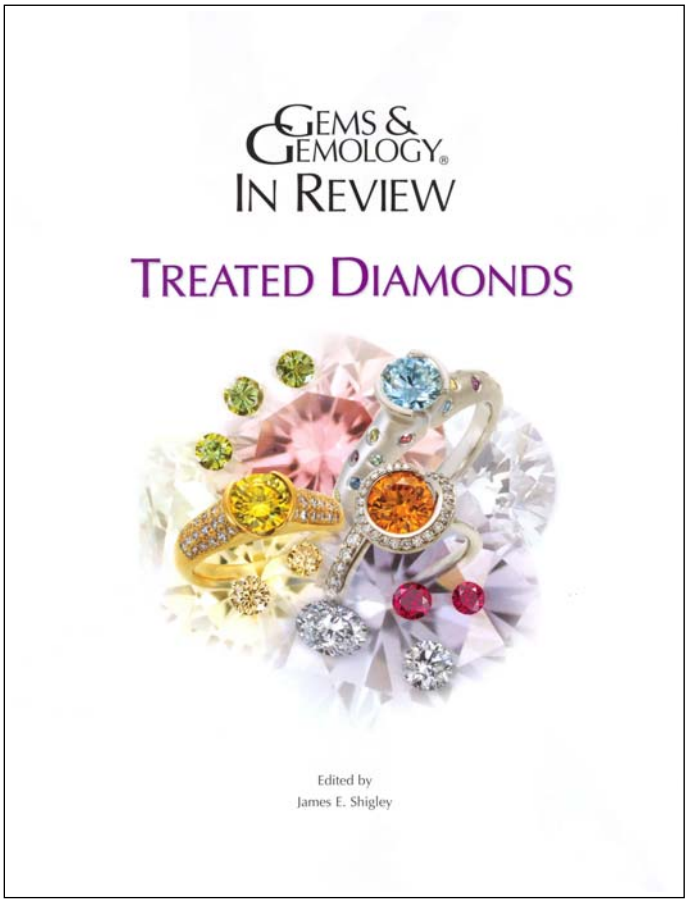
GEMS&GEMOLOGY IN REVIEW: TREATED DIAMONDS



GEMS&GEMOLOGY REVISADO: DIAMANTES TRATADOS

301 páginas de formato 29 x 22 cm. de tamaño, encuadernado con tapa semirígida y cubreportadas duro, acompañado de un póster para la identificación de diamantes rellenos.
Editado por James E. Shigley

G&G IN REVIEW: TREATED DIAMONDS

Fundada en 1934, Gems & Gemology es la revista perteneciente al Instituto Gemológico Americano, GIA. G&G publica artículos rompedores con información técnica sobre diamantes, piedras de color, perlas – donde se encuentran, sus características únicas, tratamientos a los que se someten, técnicas de identificación – todo acompañado de fotografías y gráficos informativos.

Los volumenes de la colección Gems & Gemology In Review se centran en tres aspectos de los diamantes tan importantes como son los diamantes *fancy,* los sintéticos y los tratados. Se basan en la realización de artículos nuevos de alto interés, también incluyen reportajes publicados originalmente en la revista. La serie G&G in Review consta de tres volúmenes: Diamantes Sintéticos, Diamantes de Color y Diamantes Tratados. Todos los volúmenes están encuadernados con un alto nivel y con fotografías de una calidad inmejorable.

La colección Gems & Gemology In Review, está editado por la editorial James E. Shigley y por ahora sólo existe la versión en inglés.

Este tomo de la colección Diamantes Tratados, trata este tema con total profesionalidad y conocimiento científico, recorriendo todos los posibles tratamientos uno por uno. Estudia las características de estos diamantes especificando tratamiento por

tratamiento.

Incluye un estupendo póster sobre la identificación de los diamantes rellenos muy gráfico y útil.

Explicado de forma sencilla, clara y extensa el libro contiene multitud de fotografías a todo color, gráficos, tablas, diagramas... Con encuadernación de lujo el libro tiene tapas semirígidas y una cobertura exterior fuerte para una mejor conservación. Son más de 300 páginas de alta calidad con un tamaño de 29x22 cm.

Figure 7. A flash effect is one of the most important visual features of filled breaks in a diamond. In darkfield illumination (left), this effect is a very characteristic yellowish orange; it changes to a distinctive blue when the stone (here, no. 1 in table 1) is rotated slightly to a position where the background becomes bright (right). Magnified 20×.

a standard 10× loupe is sufficient. In fact, stones with fractures or cleavages in the table-to-culet direction probably are not good candidates for filling, as the flash effect will be

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Figure 13. Heating of the coated diamonds in air demonstrated that the coatings are stable up to 500°C, as shown here, but substantial change could occur between 600°C and 800°C. The blue coating turned pink after heating at 600°C for 30 minutes. Composite photo by Jessica Arditi.

revealed that most of the coating had peeled off, with only small remnants remaining (figure 14). It should be mentioned that even untreated diamonds would display surface damage if heated at this temperature in air.

Epelboym et al. (2006) studied the impact of annealing similar coated diamonds in a vacuum, which reduced the effects of oxidation. They reported that while some stones began to change color at temperatures as low as 300°C, most changed color at 900–1000°C.

Jewelry Setting, Repair, and Cleaning. No damage was noted from the filing or polishing of the prongs, but the coatings on all three diamonds were removed

Figure 14. After heating at 800°C for 30 minutes, most of the green coating peeled off this diamond and only a small portion remained. Photomicrograph by W. Wang; magnified 70×.

34 COATED DIAMONDS

Figure 9. Most of the laser channels appeared dark in transmitted light. In some cases, such as with the step-like series of cleavages in figure 6, this was the best way to see them. Photomicrograph by Shane F. McClure; magnified 40×.

center of the table—not present before treatment—where a piece of diamond had come out (figure 12). The lasering extended from the inclusion to the bottom of this cavity.

DISCUSSION

We believe that the three diamonds that did not show any evidence of enhancement (nos. 3, 7, and 8) were deemed unsuitable for this process because of the absence of tension cracks or because the dark inclusion was too deep within the host (again, see figure 3). It is possible that the one stone (no. 7) that had two small dark crystals with small tension cracks was not treated because these inclusions had minimal effect on the overall clarity of the stone. This would support our theory that the treatment works best on dark inclusions near the surface, as was the case with the remaining six diamonds. Inducing a surface-reaching feather from a deep inclusion would probably result in a clarity feature that was more noticeable than the original inclusion. One of the inclusions treated in our test sample

Figure 10. The new laser technique dramatically improved the appearance of most of the treated inclusions by removing the black coloration as seen here in sample no. 6. The view before treatment is on the left. Photomicrographs by Shane F. McClure; magnified 40×.

Figure 11. Before treatment (left), this diamond (sample no. 5) had two included crystals, both surrounded by dark feathers, that were adjacent to each other. After treatment (right), the feather at the top is no longer dark and the crystal is now clearly visible. However, the treatment did not reach the second inclusion, so it remains unchanged. Note the large, bright feather leading to the surface that was created by the treatment. Photomicrographs by Shane F. McClure; magnified 40×.

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