

SSEF to Identify GE POL Treated Diamonds

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The Raman microscope at SSEF Swiss Gemmological Institute for taking supercooled luminescence spectra of diamonds.

It may seem that treated diamonds are a difficulty for the trade and a challenge for the laboratories. In the 19th century the diamond trade was only dealing with the problem of diamond imitations such as glass and zircon which were easily to identify as fakes by simple optical methods.

Today identification is a much more difficult task as more imitation diamonds and synthetic diamonds exist. Artificial color modification through irradiation is used to create color in unattractive stones. The laboratories have had to adapt their equipment to identify such color treatment. Gemologists have had to learn more about the complexity of the material diamond and to get used to advanced scientific techniques. The various types of diamonds, essentially due to the presence and the state of nitrogen, boron or lattice defects, perform different reactions to the treatments applied. The identification of color authenticity is still a capacity located at and mastered by a few laboratories in the world. While the identification of yellow, brown, pink and blue seems to be a feasible task; the identification of the color green is still a problem in many cases. This coloration, being a simple damage of

irradiation, may occur naturally as well as by artificial process.

The reducing of some yellow or brown has already been tried some 30 years ago. Slightly yellow diamonds have been coated with the complimentary color, i.e. blue, in order to mask the less desirable color. The resulting gray tinge is almost invisible compared to the original slightly yellow. Other means of reducing color did not exist until recently.

However, a press release in March 1999 informed the trade and public about a new process that turns a rare type of brown diamond, called I₂a, to near colorless or even colorless. The diamond trade found itself in a delicate situation because the producers and distributors claimed that the treatment was not identifiable. A high pressure/high temperature (HPHT) treatment transforms those brownish diamonds of type I₂a into colorless stones of a higher value. The product has been initially been named GE POL processed diamonds.

The SSEF Swiss Gemmological Institute announced at Basel 2000 that they have found the key features for the identification of GE POL treated diamonds. The results and analytical procedure have been discussed with De Beers DTC Research Center, and the SSEF is now offering the detection service to the public and the trade.

Their research appeared in journals during May of this year and the more advanced results, which enabled a breakthrough in the detection process, are based on a refined technology, on more diamonds and on a comparison of different kinds of I₂a diamonds. Based on new findings the color modification of the type I₂a diamonds has been better understood. The new methodology used at the SSEF is essentially based on laser induced fluorescence spectroscopy, performed on a Raman System at liquid nitrogen temperature. The identification offered as an additional routine lab service, being part of the Diamond Grading or Test Report.

For further information see under " INFO " or " NEWS " on the Website www.ssef.ch