



रत्न परीक्षण प्रयोगशाला

रत्न तथा आभूषण निर्यात संवर्धन परिषद

वाणिज्य मंत्रालय, भारत सरकार द्वारा प्रायोजित, जयपुर

Gem Testing Laboratory

THE GEM & JEWELLERY EXPORT PROMOTION COUNCIL

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तार/Grams : GEJEXCON

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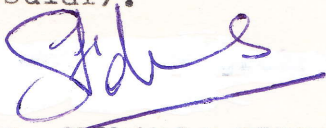
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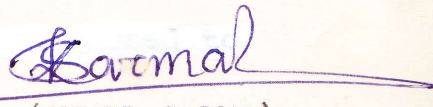
LAB INFORMATION CIRCULAR - 003

In October '94 we have examined a number of different gemstones. A few interesting stones were.

1. Fluorite: (a). Transparent well cut cabochons and faceted stones certified. These were deep blue, blue, olive green and deep emerald green in colour. The properties were; R.I. 1.43, Isotropic, S.G. 3.15 to 3.20 (Hydrostatic) under U.V. lamp, bright violet or bright green fluorescence. Under magnification distinct colour zoning, iridescent cleavage cracks and triangular two-phase were clearly visible.
(b) Green drilled bead of fluorite with a number of surface reaching fractures, which were obviously filled with green colour. The body colour of the stone was light green and green colour concentration in fractures were clearly visible.
2. Corundum Doublet: Transparent well cut stone with purple red colour. The properties were typical for corundum R.I. 1.76 - 1.77 (Crown+Pavilion), but under U.V. lamp it shows weak red (crown) strong red (pavilion) and girdle inert. Under magnification the crown shows silk and crystalline inclusions but pavilion shows gas bubbles and curved lines, the junction shows flattened gas bubbles. Under immersion in M.I. liquid the crown was green slice while the pavilion was red in colour.
3. Transparent Grossular Garnet: Transparent well cut with a greenish yellow (lime-green) colour, the properties typical for grossular garnet, R.I. of 1.75 and S.G. of 3.63. Under magnification zoning was observed.

The colours seen are those which are not so commonly seen as in the case of Hessonite and Tsavorite (Green Grossular).


(MRS. SHYAMALA FERNANDES)
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Enhancement: Blue green aquamarine can be converted to purer blue shades.

Technique: Many techniques are used in heat treatment of Aquamarine. It may be conducted with stones buried in sand, ash or charcoal in an ordinary clay crucible or a glass test tube or alumina under ordinary flame or in a furnace.

Method: Under ordinary flame (wood, coal) the samples are kept for 15-20 minutes and the crucible is then left for cooling. When an electric furnace is used, the temperature is set at 450°C with the samples buried in sand, ash or charcoal. The samples may be heated for 35 minutes or upto 3-4 hours, as the case may be. The furnace is switched off and allowed to cool.

For better yield

- a. Check the samples with a dichroscope in order to know the possible degree of colour change.
- b. Cut and polished samples are preferably heated, should be placed such that they do not touch each other.
- c. Avoid included and cracked samples.
- d. Depending upon the locality, the temperature may vary i.e. from 300 - 450°C. So before going for bulk treatment, a sample is tested at different temperatures (300-450°C)
- e. Do not attempt to check the samples while heating is on.
- f. Cooling should be natural cooling, do not attempt to cool by any external means.
- g. Take out the samples only when they are cool.

Vikas Joshi

(VIKAS JOSHI)
Research Gemologist.

NOTE: Please note that the Gem Testing Laboratory is not responsible for any loss or damage incurred by you in your experiments.