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GRS Alert: Next-generation of synthetic diamonds reach market

CVD-grown Blue Diamonds – Identified by GRS and CGL laboratories

Hong Kong, Lucerne and Vancouver – A distinctly new type of synthetic blue diamond sized from 0.25 carats to over 1.25 carats turned up at both the Bangkok and Hong Kong Gems & Jewellery Fairs in September 2013 along with pink, yellow, and colourless varieties of other synthetic diamonds.

Orion PDC Diamonds, a synthetic coloured diamond producer, asserts in their promotional collateral, PDC Company, that both genuine earth-mined and lab-grown diamonds are 'real diamonds'. While its true that both diamond types share the same physical and chemical properties, this statement nonetheless used within the context of the trade is very misleading. It would imply that lab-grown diamonds are 'natural', which is certainly not the case.

This new generation of synthetic coloured diamonds has been since identified by **GRS** and **CGL-GRS Laboratories** as being CVD-grown. A diamond expert task force was formed. After exhaustive tests utilising both standard and advanced instrumentation, GRS – CGL-GRS has detailed conclusive results identifying this new type of synthetic blue diamond, which had not been previously identified in scientific literature. A detailed report of their findings appears in GRS' Contributions To Gemology, November 2013 edition.

These CVD-grown blue diamonds are inert to SWUV and LWUV illumination and reveal no specific phosphorescence characteristic of HPHT-grown or natural blue diamonds. They are produced with high clarity (VVS2-VS2), and importantly, it is impossible to separate them from their similarly coloured natural diamond counterparts by using a loupe or a microscope. (see image) Optical spectroscopy (UV-VIS, FTIR and PL) reveals them to be of type IIa. Their colour is the result of strong absorption of very intense silicon-related centre. By contrast, both natural and HPHT-grown blue diamond colour is the result of boron impurity. The silicon-doped blue CVD diamonds are not electrically conductive either. Thus an electrical conductance test is a further indicator of the CVD origin of these diamonds. This test method is also a useful identifier of irradiated blue natural diamonds, which are of type Ia or IIa, since they act as electric insulators.

Natural blue diamonds are some of the costliest and rarest diamonds in the world, next to natural pinks. Almost every colour of natural diamond is now being replicated in the lab. Previous limitations with growing these stones over one carat have now been surpassed. Today an increasing number of commercial labs producing diamonds are in operation, especially in Asia due to lower production costs. CVD technology seems to be increasingly employed to grow both near-colourless and coloured diamonds. This development makes it imperative for buyers to vigilantly screen all melee and small coloured diamond parcels for determination of synthetic diamond, especially in the Asian markets.

International labs collaborate to meet demand for new synthetic diamond and treatment detection

GRS and CGL-GRS laboratories answered the call for definitive detection of synthetic diamonds and diamond treatments by networking 3 strategic diamond research laboratories located in Switzerland, Hong Kong and Canada. The new task force will continue its ongoing research to uncover the latest production of newer diamond synthetics and treatments as they appear in the market. They will also offer a reliable alternative to major labs around the world. GRS lab is overseen by Dr. A. Peretti, while CGL-GRS lab is managed by B. Deljanin. The collective international gem and diamond labs began operating in Lucerne in 1996, Bangkok in 1999, Hong Kong in 2009 and Vancouver in 2009 with a total staff at all facilities numbering 40.

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4 CVD-grown diamonds from Orion PDC (top) in colour ranging from Fancy light blue to Fancy greyish blue, weighing from 0.30 – 0.65cts respectively. 4 Synthetic HPHT-grown diamonds from Chatham, AOTC, TAIRUS (bottom) plus one natural blue diamond (insert) from GRS-CGL reference collection for this research.

About the Labs:

GRS-Hong Kong and GRS-Switzerland are part of the Gemresearch Swisslab network specializing in Country of Origin reports for coloured gemstones. These specialist labs have recently invested heavily in research and development in order to detect new treatments and to identify diamond synthetics appearing in today's market. In 2014, GRS-Hong Kong and GRS-Switzerland will also provide testing and identification services for coloured diamonds from different origins.

CGL-GRS Swiss Canadian Gemlab Inc. in Vancouver, Canada (former Canadian Gemmological Laboratory or also known as "CGL") is a partner laboratory with GRS Lab (Hong Kong) ltd. CGL-GRS was founded in 2013. It is a full service laboratory specializing in

identification, grading, lasering and certification of Canadian near-colourless diamonds and natural coloured diamonds from around the world, including both treated and synthetic diamonds.

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