Branko Deljanin, B.Sc., GG, FGA, DUG
president of CGL
(Canadian Gemological Laboratory)

伯蘭高.杜俊寧
加拿大寶石鑑定所所長

Branko Deljanin, B.Sc., GG, FGA, DUG is head gemmologist and president of CGL (Canadian Gemological Laboratory) in Vancouver since 2009. He is a research gemmologist with extensive experience in advanced testing of gemstones. A graduate of the University of Belgrade in Geology, Deljanin earned his Graduate Gemologist diploma at GIA in 1995 and worked for three years at their Gem Identification department on coloured diamonds, coloured stones and pearls in New York. In 1998, he became Director of Gem Identification and Research for the EGL USA Group. In 2002 he was put in charge of its' Canadian Operations, with headquarters in Vancouver, B.C.

He is a Fellow of the Gemmological Association of Great Britain and was instructor of their FGA, DGA Programs. Since 1999, he has focused on the HPHT process for changing the colour of diamonds and is considered an international expert on identification of new diamond treatments and synthetic diamonds. In 2001 he earned his Advanced Gemology Diploma (DUG) on subject "Identification of HPHT treated diamonds" from University of Nantes, France. Branko has conducted on-site research on gems and coloured diamonds in Sri Lanka, Russia, Brazil and Australia, and has managed many projects on natural, treated and synthetic diamonds with international team of lab gemmologists.

He has been a regular contributor to trade and gemmological magazines (Rapaport, Idex, Canadian Jewellery, Canadian Diamonds, Business Jewellery, New York Diamonds, Jewellery News Asia, Gems and Gemology) and presented reports at a number of prestigious research conferences (Material Research, European Diamond, De Beers, Canadian Gemmological, GIA Gemological and International Diamond Conferences).In 2004, 2005 and 2006 Branko was a finalist for the international AGA "Antonio Bonnano Award for Excellence in Gemology".

伯蘭高.杜俊寧先生畢業於貝爾格萊德大學地質學系，並擁有 GG、FGA、DUG 的寶石學文憑，自 2009 年於溫哥華擔任加拿大寶石學院 CGL 的首席鑑定師及院長，他是一位經驗豐富並鑽研於先進寶石檢測。1995 年在 GIA 取德研究寶石學家文憑後，並在 GIA 紐約辦公室的珠寶鑑定部門工作三年，負責彩色鑽石、彩寶和珍珠的項目。1998 年成為 EGL 美國單位的研究及鑑定總監。2002 年擴展業務至加拿大，並將該地總部設在溫哥華 B.C. 他同時也是英國寶石學協會成員，並為 FGA、DGA 的課程指導老師。1999 年他開始專注在 HPHT 高溫高壓改色方面特殊加工的過程，因此被認為是鑑定處理鑽石方面的國際專家。在 2001 年於法國南特大學以"鑑定高溫高壓處理鑽石"為題，取得高級寶石學文憑(DUG)。伯蘭可陸續與國際鑑定單位的寶石學家團隊，在斯里蘭卡、俄羅斯、巴西和澳大利亞實地現場進行調查，並安排主持多項天然、處理及合成鑽石的專案研究。他一直以來是貿易和寶石學雜誌的定期撰稿人(Rapaport、Idex、Canadian Jewellery, Canadian Diamonds, Business Jewellery, New York Diamonds, Jewellery News Asia, G&G)，並於著名學術會議論談提交研究報告((Material Research, European Diamond, De Beers, Canadian Gemmological, GIA 寶石學和國際鑽石論壇). 更在 2004、2005、2006 入圍 AGA"Antonio Bonnano 卓越寶石學成就獎) 。

Screening of diamond types and identification of synthetic diamonds using Polariscope and UV Lamp

Branko Deljanin, B.Sc., GG, FGA, DUG

使用偏光鏡及紫外光燈篩選鑽石的類型及鑑定合成鑽石

伯蘭高.杜俊寧

Abstract:

The goal is to screen different types of natural diamonds and identify synthetic diamonds less than 1ct using only standard instruments (UV lamp and polariscope mounted on microscope). Diamonds (natural, treated and synthetic) are classified into four basic types (Ia, IIa, Ib, IIb) according to the relative presence of nitrogen (N) and boron (B) impurities.

Fluorescence is a luminescence that is found as an optical phenomenon in diamonds when exposed to UV light, triggers the emission of visible light (usually blue in 95% of natural diamonds) . Most natural diamonds react stronger at long wave UV and usually weaker (usually blue) at shorter wavelengths.

When small **polarioscope** is placed under microscope even small and melee diamonds could be checked for presence (“tatami pattern” indicate natural diamond) or absence of pattern (identified HPHT grown diamonds), while pattern of new CVD-grown diamonds could overlap with natural diamonds.

We recommend use of UV lamp for screening of diamond types and identification of HPHT-grown diamonds by use of polariscope (mounted on microscope). It is important to know relation of synthetic diamonds types in order to know when to send stones to an advanced lab for further testing for natural or synthetic origin (especially CVD-grown that are also HPHT enhanced).

Keywork: UV、polariscope、types (Ia, IIa, Ib, IIb)、Nature、Syth.Diamond、treatment

摘要：

我們的目標是篩選出不同類型的天然鑽石，以及只用基本標準的儀器 (紫外燈和安裝在顯微鏡上的偏光鏡) 來檢測小於 1 克拉的合成鑽石；鑽石(包括天然、處理及合成)，根據其微量元素氮(N)和硼(B)的存在或分佈可分為四種基本類型(Ia, IIa, Ib, IIb)

螢光反應是鑽石暴露於紫外線下時被激發出可見光的光學現象，觸發可見光的發射，通常 95% 的天然鑽石發出藍光。大多數天然鑽石的反應在長波紫外燈下反應較強，而在短波紫外線下通常發出較弱的藍光。

當小型偏光鏡置放在顯微鏡下，即使是小或是米粒鑽皆能觀察到“榻榻米圖案”，這指示出為天然鑽石，或是沒有圖案的高溫高壓生長的合成鑽石。然而新的 CVD 合成鑽石卻與天然鑽石的圖案有所重疊。

我們建議使用紫外燈來篩選鑽石的類型，並使用安裝於顯微鏡下的偏光鏡來初步鑑定高溫高壓生長的鑽石。這些步驟重要的是讓我們知道合成鑽石的種類關係，並明白何時該送寶石至先進的實驗室進行更多的檢測，以區分天然或合成，特別是 CVD 同時具有高溫熱處理的種類。

關鍵字：紫外燈、偏光鏡、鑽石類型(Ia, IIa, Ib, IIb) 、天然、處理、合成