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KALIMANTAN DIAMOND

Morphology, surface features and some spectroscopic approaches

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Abstract

Alluvial diamonds are found on the island of Borneo, Indonesia. The deposits are found around the Landak River in western Kalimantan, in Linhaisai minette in the headwaters of the Barito River in central Kalimantan, and also in the Banjarmasin-Martapura area of southeastern Kalimantan where rivers drain from the Meratus Mountains into the Danau Seran Swamp. Mining activities date back to 600 A.D. and fine diamonds with fancy colours such as blue, pink and canary-yellow have been reported. The authors visited the mines in the Banjarmasin-Martapura area early March 2002 to study mining and trading activities. They purchased 14 specimens of diamond for further study. This paper provides a general outline and description of the diamond morphology and surface features of southeastern Kalimantan diamond. Some spectroscopic features of these diamonds were studied and recorded.

Map 1. Map of Borneo where alluvial diamonds are found. BK – Linhaisai minette in the watershed of the Barito River area; L – Landak area; M – Martapura/Banjarmasin area. Modified after Janse & Sheahan (1995)

Introduction

Diamond occurs in commercial quantities in the Indonesian state of Kalimantan. Kalimantan, which is part of the island of Borneo, is located along the equator between longitudes 110 °E and 119 °E. Banjarmasin, the capital of Kalimantan, can be accessed by flying from Jakarta to Syamsuddin Noor Airport, Banjarmasin.

Diamond is found mainly in the Banjarmasin-Martapura region of southeastern Kalimantan, the Landak district of western Kalimantan and at Linhaisai minette in the upper part of Baritos River (See Map 1). Like India, Kalimantan is one of the world oldest sources of fine quality diamonds that occur in a range of fancy colours (Webster 1987).

Fourteen samples of diamond (Fig. 1) were acquired both from the diamond trading centre in Martapura and at the mine site. These were examined in detail in order to produce this paper. The purpose of this paper is primarily to provide some background information about diamond mining in Kalimantan, and the deposit at Martapura in particular. A mix of both basic and advanced instruments, such as the stereo- and

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Fig. 1. Fourteen specimens of rough diamond (KTM 1-14) acquired from Banjarmasin-Martapura that weighed from 0.03 to1.82 ct and range in colour from colourless to light yellow, yellow and brown. Note: KTM 11 was subsequently shown to be a zircon.

cathodoluminescence microscopes, infrared, ultraviolet and Laser Raman spectroscopes, were used to assess these Kalimantan diamonds for their morphology, surface features, types, and characteristic inclusions.

History

Kalimantan literally translates as 'river of gold and diamond'. Mining of diamond in Kalimantan dates back to around 600 A.D. (Webster 1987). The principal deposits were in the vicinity of the Landek River, near Pontianak, and in the tributaries of the upper reaches of that river. Other deposits are located along the upper reaches of Sekajam River and near Sanggau on the Kapuas River (Webster 1987). Another diamondiferous district lies in the Banjarmasin-Martapura area of southeastern Kalimantan. Historical records reveal that around the 700 A.D., the Malay vanquished the Hindus and initiated the first diamond mining operation in what is now Kalimantan. Therefore, Kalimantan diamond mining activities can be considered to be one of the oldest in the world and be quite similar in history to that of diamond mining activities in India. In the early Sung period (960-1279 A.D.), some Chinese and Malays were reported working together in the mining of these diamonds. By the 16th century, the Portuguese reported that mining activities were flourishing. The Dutch also reported on mining in this region around the 17th century. In 1676, Jean Baptiste Tavernier, the famous French jeweller and traveller, provided the first detailed description of Indonesian diamonds and the trading of diamond at Batavia (now Jakarta). Tavernier also related that indigenous Malays were using diamond to pay their annual tribute to the Chinese Sung Emperor.

Kalimantan diamond production was rather small and has been difficult to estimate (Janse 1995). Production figures, revealed by Dutch colonists, indicated that diamond production in Kalimantan fluctuated between 236 and 2,152 carats over the years 1916 to 1936, and attained 907 carats in 1937 and 3,292 carats in 1939 (Ball 1931). According to Janse's 1995 report, annual production for the last twenty-five years, from local miners, averaged 20,000 carats; and total production from antiquity until 1990 was estimated to be 1 million carats (Spencer *et al.* 1988). Towards the end of the 19th century, diamond production in Kalimantan was greatly eclipsed by the discovery of diamond in South Africa. No mechanized, commercial mining operations were carried out at that time.

From 1982 to late 1990s, there was renewed interest by several companies to explore and mine diamond in Kalimantan. But there were no economic deposits worthy of further operations. For example, Anaconda unsuccessfully explored for diamonds in central Kalimantan from 1982–1985 (Bergman *et al.* 1988). Ashton Mining and Pelsart explored the Martapura area but also did not meet with success. In 1987, Acorn Securities (a joint venture between the Indonesian Government represented by P.T. Aneka Tambang, an Australian publically listed exploration company known as Acorn Securities, and a British private company, Keymead Pty. Ltd.) explored the Danau Seran and Cempaka swamps, the tributaries of Apukan River, and along the Riam Kanan and Riam Kiwa Rivers. From a total of 5346 m^3 of gravels that were excavated from the bulk sample pit, the yield included 1,051 ct of diamond, 480 g of gold and 178 g of platinum (Spencer *et al.* 1988). Local inhabitants informed the authors of this paper that this joint venture company had since ceased operations.

In 1999, Ashton Mining's 48 per cent owned Cempaka Alluvial Diamond Project attempted to dredge the Cempaka Swamp using a floating bucket dredge that was made in Malaysia (Brown 2003). The leased area covered approximately 3,920 hectares of low lying swampy land within the Cempaka swamp and the Danau Seran palaeochannels. It was anticipated that commissioning activities would be completed during the first half of 2000. But Ashton Mining was taken over by Rio Tinto during 2000, and, as a result, the project in Kalimantan was onsold to a Canadian exploration company BM Diamondcorp. According to Waldman (2004), this company onsold the project to the BDI Mining Corporation who have recently commissioned the Cempaka diamond mine. Stage 1 of commercial production was expected to commence by the end of 2004. The life of the mine has been estimated to be more than 10 years with a yield of at least 700,000 ct of diamonds being expected from the dry gravels and wet paleochannels from the Cempaka swamp and the Danau Seran palaeochannels.

Brief geology of the Kalimantan diamond deposits

Most of the world's diamonds are found in relationship to Precambrian cratonic areas, where the rocks have been part of the geologically stable continental crust for over billions of years (Janse 1984). These cratons are found in most continents, for example, the Western African and Tanzanian cratons, the Siberian craton, the Canadian Shield, and the Kimberley craton in north-west Australia. The world's gem diamonds are predominantly known either as having a kimberlitic or lamproitic origin.

But, in Kalimantan, the diamonds have been found in alluvial deposits that give no indication of either kimberlite or lamproite as their emplacing diatremes (Bergman *et al.* 1987, 1988, Spencer *et al.* 1988). It was believed that the rock that hosts Kalimantan diamond, which has been termed the Pamali Breccias (Krol 1919, 1920, Koolhoven 1935, van Bemmelen 1970, Bergman 1987), is in some ways related to either a hypothesised kimberlitic or lamproitic origin. However, further investigations by Bergman *et al.* (1987) showed that the Pamali Breccias were actually derived from materials eroded from an earlier Bobaris ophiolite that belonged to the late Cretaceous Manunggul Formation. More generally, based on their study of 'Nitrogen-defect aggregation and time-temperature constraints' Taylor *et al.* (1990), concluded that some of the Kalimantan alluvial and Ellendale 'pipe' diamonds were of peridotitic origin; and that these diamonds could have been derived from a common source within the ancient Gondwanaland lithosphere. These authors suggested that these diamonds survived in remnant subcontinental lithosphere that underlies the southeast Asian and eastern Australian microcontinental blocks—which separated from the northeastern Gondwanaland margin during the Palaeozoic. Win *et al.* (2001), in their study of diamond from Myanmar based on their morphology, crystal forms, colour, degree of resorption, surface features, internal structure, mineral inclusions, nitrogen content and aggregation state, suggested that the diamond came from the upper mantle region and was believed to have been derived from an alkaline igneous rock—but, again, no conclusive evidence has been produced about the true origin of this diamond. Wathanakul *et al.* (2001), basing their study on diamond found at Phuket, Thailand, found that their detailed analysis the morphology, crystal forms, colour, surface features, internal structure, and mineral inclusions in these diamonds, indicated that the origin of diamonds recovered from the waters off Phuket remained answered. Griffin *et al.* (2001), in their study of diamond from Thailand, Myanmar and Sumatra, based on isotopic data and the dominantly peridotitic nature of syngenetic inclusions in these diamonds, ruled out the Argyle lamproites as a possible source of these diamonds. These researchers also discriminated diamonds from Myanmar and Thailand from morphologically similar stones from eastern Australia.

Presently, the alluvial diamonds of Kalimantan are recovered from palaeochannels that lie beneath the swamps at Danau Seran and Cempaka. It has been suggested that these diamonds were result of repeated erosion and re-deposition before being finally deposited in later Tertiary and Quaternary sediments in which they are now found (Spencer *et al.* 1988).

The authors visited the deposits around Po Poong and Pum Pung (Fig. 2A), early March 2002, where diamonds were still being recovered, on a small scale, from the coarse gravels, sandy gravels and muddy swamps of the area. At Awang Bangkal (Fig. 2B), diamonds also were being extracted from the bottom of the lake.

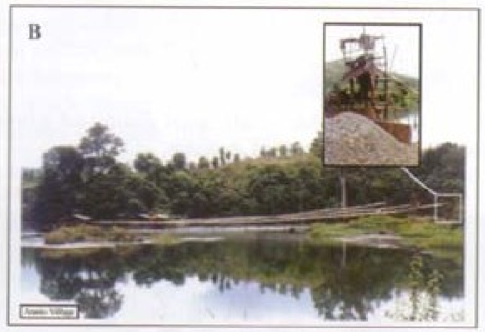


Fig. 2.
(A) Diamond mining at Po Poong and Pum Pung (muddy deposit overlain by sandy gravel).
(B) Extraction of diamond from the bottom of the lake at Awang Bangkal.

Mining

Over the last century, mining of diamond in Kalimantan has been very primitive. That is, they have been recovered from ponds or along riverbanks by the use of picks, shovels, and locally made baskets—followed by washing of the mined gem gravel to recover diamonds. In both Po Poong and Pum Pung (Fig. 2A), local miners mine diamonds using an open pit mining process.

First, they remove the overburden of sandy and coarse gravel. In the Po Poong area, the overburden was rather shallow; whereas in Pum Pung it was up to 8 to 9 metres in depth. Miners work in a team of five to ten persons. Once the overburden has been removed, the muddy gem bearing layer at the base of the swamp is reached. With the assistance of a high power jet of water, the miners then use their picks and shovels to recover the potentially diamondiferous sediments. The muddy water, together with its associated gravels, are then pumped up into a high *palong* (Malay term meaning a tall wooden structure used for segregation of materials) from which the heavier materials are allowed to settle as the water is channelled to flow downwards along a long wooden sluice. This is how the heavier and larger materials are separated from the smaller and less dense materials. The next step in the process of extracting diamond is to hand wash the concentrated gravels using a pan called a *dulang* that is made from black iron or wood (See figure 3).

The *dulang* is very much like the pans used in tin and gold washing. Miners can be seen sitting or squatting at the edge of a pond, using a swishing motion to concentrate the denser materials in the middle of the *dulang*. The miners then spread out the gravels after each 'swish' so that they can have a better look at the remaining concentrate—carefully looking out for that tell-tale glitter of diamond that could make them rich.

At Awang Bangkal (Fig. 2B), mining of diamond was carried out on the lake. A large water-powered pump was floated on the barge. A group of five miners were engaged in the search for diamonds. Some were in charge of the pump, while others directed the suction of the pump to remove heavy materials from the bottom of the lake. The heavier materials, which were pumped out from the lake, were then transferred to the bank of the lake. The *palong* system was again used to facilitate the separation of coarse from the finer materials. These miners then proceed to wash the gem gravel, using the *dulang*, in their search for diamonds.

Trading of diamond

When a diamond is recovered, it is usually presented to the group leader or *Haji*—who is responsible for selling it in the diamond market at Martapura. Besides this important function, the

Fig. 3. Washing the sandy gem diamond gravels using a pan made of black iron wood called *dulang*.

It is presently estimated that ~200 carats of rough diamond per month are mined from this area.

At the time of their visit (in late February until early March 2002), some of authors (TTS, LHM, LKK, RH) were allowed to examine one natural coloured large rough black diamond of ~25 carats (any treatment could not be determined at the site), and some cut stones that weighed from 0.50 to 4 ct and displayed colours of light yellow, intense yellow and brownish-yellow (See figure 4). The recovery of other coloured diamonds, such as pinks, blues and other fancy colours, has previously been reported by Spencer *et al.* (1988).

The largest diamond, claimed to be recovered from this site, is said to belong to the Rajah of Matan. It is claimed to weigh ~367 carats; but is generally thought to be colourless quartz and not diamond.

Fig. 4. One of the authors (TTS) was fortunate to be allowed photograph this suite of diamonds at the diamond trading market. These diamonds, that were not used for research purposes, contained one large rough black diamond of 25 ct and some rough and faceted diamonds that weighed approx. from 0.50 to 4 ct.

Haji also looks after the welfare of the miners working in his group. Any smaller stones, of less than a few points (small fraction of a carat) weight, are kept by the miners as their 'pocket money' to pay for coffee, clove cigarettes, or a lunch treat. The miners work six days a week. Friday is their day off, as it is also the prayer day for Muslims. Coffee or lunch breaks are usually taken at the small food store set up near the mine site by enterprising members of miners' families.

Materials and Methods

Specimens

Eleven (11) natural diamonds were purchased at the diamond-trading centre in Martapura, and three (3) diamonds were bought at the Po Poong mining site. The weights of these rough diamonds, which have been coded KMT 1-13, ranged from 0.03 to 1.82 ct. Their colours were either yellow, brown or colourless. Sample KMT 11 was found to be zircon.

Instruments

Each diamond studied in the preparation of this report was accurately weighed, with weights recorded to the second decimal place. They were then examined to determine their colours, morphology, surface features, type of diamond, and inclusions, using the combination of: binocular stereomicroscopy (Nikon, SMZ-U microscope), cathodoluminoscopy using a CITL luminoscope, a FTIR-Nicholet infrared spectrophotometer, a Nexus spectrophotometer, a Perkin Elmer Lambda 900 UV-Vis-NIR spectrophotometer, and Renishaw 1000 Laser Raman spectromicroscope.

RESULTS

The physical properties of the Kalimantan diamonds examined during this study are described below, and summarised in table 1.

Morphology

Kalimantan diamonds (Fig. 5) displayed various habits that include the octahedron, the tetrahexahedron (THH), the flattened THH, the rounded THH, the dodecahedron, and the macle.

Fig. 5. Morphology of the Kalimantan diamonds that are representative of various forms of morphology displayed by Kalimantan diamond. KMT14 (octahedron), KMT (elongated tetrahexahedron or THH, KMT4 (macle), KMT6 (dodecahedron); KMT7 (flattened THH).

Surface features

Common surface features observed included percussion scars, radioactivity generated spots, plastic deformation, and other less common features (See figure 6).

Percussion scars were the most observed feature, with thirteen of the fourteen specimens displaying abundant percussion scars (Fig. 6A). The presence of rhombic shaped surface features suggests that these diamonds had experienced much mechanical trauma as a consequence of reworking, reburial, and re-deposition processes. Curved percussion scars could be attributed to resorption that occurred when diamonds were transported to the surface by magma (Sunagawa, I. 2004, pers. comm.)

Radioactive spots (Fig. 6B), of both brown and green colour, were commonly observed on Kalimantan diamonds. Green stains were generated by contact with radioactive fluids in porous rocks that were closely associated with the diamonds. These green stains turned brown under the subsequent impact of higher temperature (Vance 1972, Bosshart 1993)

Plastic deformation was observed on surface features that appeared as shield-shape lamina, lamination lines and cross-hatched laminations (Fig. 6C). The presence of these features clearly indicated that these crystals had been subjected to plastic deformation.

Other surface features observed on these diamonds included ruts, frosted surfaces, hillocks, and etched pits. However, more samples need to be examined before any definitive statements can be made about the distribution of the surface features on these diamonds.

Cathodoluminescence (CL)

Cathodoluminescence, resulting from the irradiation of these diamonds by high energy electrons, revealed variations in luminescence with surface features observed including green CL, blue CL, diamond displaying a yellow rim and blue core, a diamond displaying a yellow core and blue rim, alternating yellow and blue banding, and blue and yellow patches within diamonds (Fig. 7).

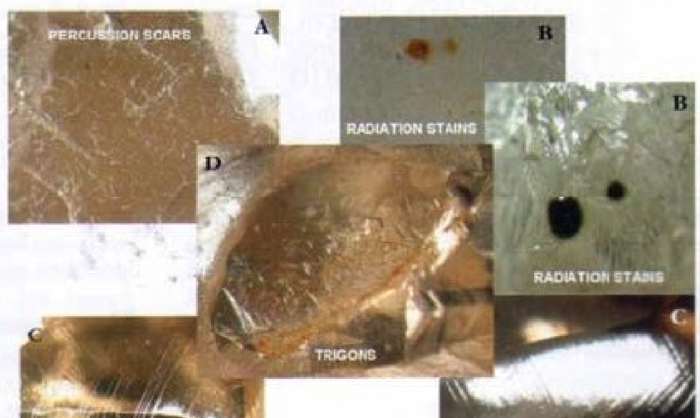


Fig. 6. Surface features on Kalimantan diamonds: (A) KMT 3 with percussion scars (B) Radioactive spots of brown colour (KMT 1) and diamond KMT 12 with green spots; (C) Lamination lines as well as shield-shape laminae (KMT 2) and cross hatch appearance (KMT 5) due to plastic deformation; (D) trigons (KMT 4).

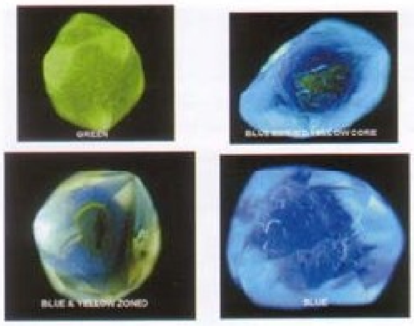


Fig. 7. Variable cathodoluminescence of Kalimantan diamonds: KMT 1 – green, KMT 6 – blue, KMT 8 – yellow core with blue rim, KMT 9 – yellowish to blue banding.

Those diamonds that displayed a saturated blue to dark blue CL (which is typical for natural diamond) owed their luminescence to the so-called blue band A CL emission, together with some blue fluorescence from the 415 nm system (Clark *et al.* 1992). Those diamonds that appeared yellow to yellow-brown revealed the presence of isolated nitrogen atoms within their crystal structure. Some diamonds, which also displayed growth features due to plastic deformation, displayed green line CL due to the presence of slip bands produced in the crystal structure when the diamond was subjected to shearing displacement.These slip bands were 'decorated' by nitrogen-related H3 (503 nm) defects.

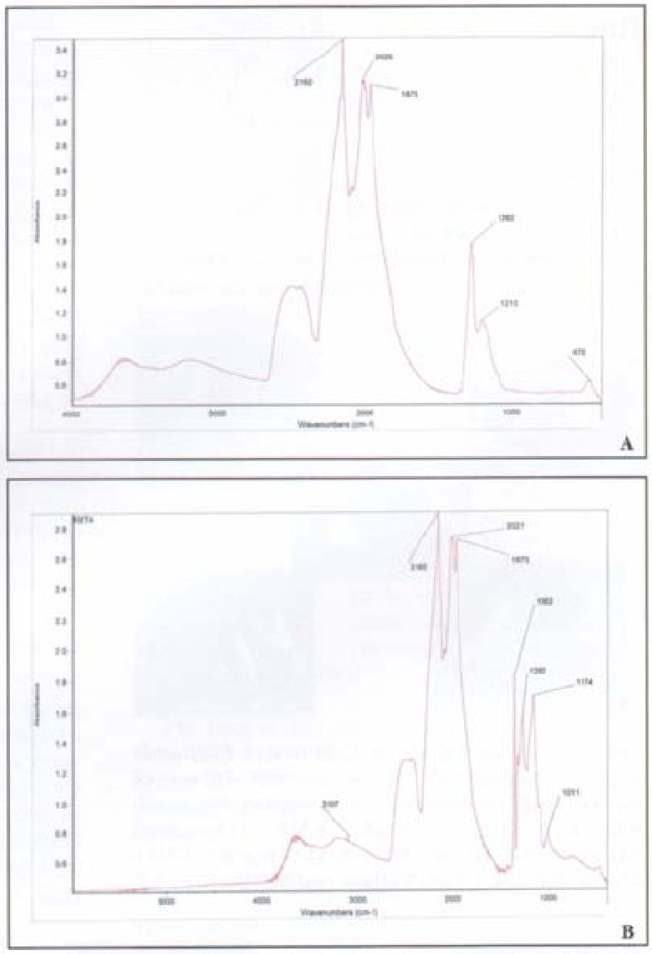


Fig. 8. FTIR absorption spectra of Kalimantan diamonds: (A) Type IaA diamond spectrum of KMT8. (B) Type IaAB diamond spectrum of KMT4.

Optical spectroscopy

FTIR spectrophotometry showed that 8 of the 13 diamonds examined were type IaA (paired substitutional nitrogens) diamonds; the remaining diamonds belonging to type IaAB (mixed paired and groups of four substitutional nitrogens) diamond that also contained platelets of nitrogens (Fig. 8 A&B).

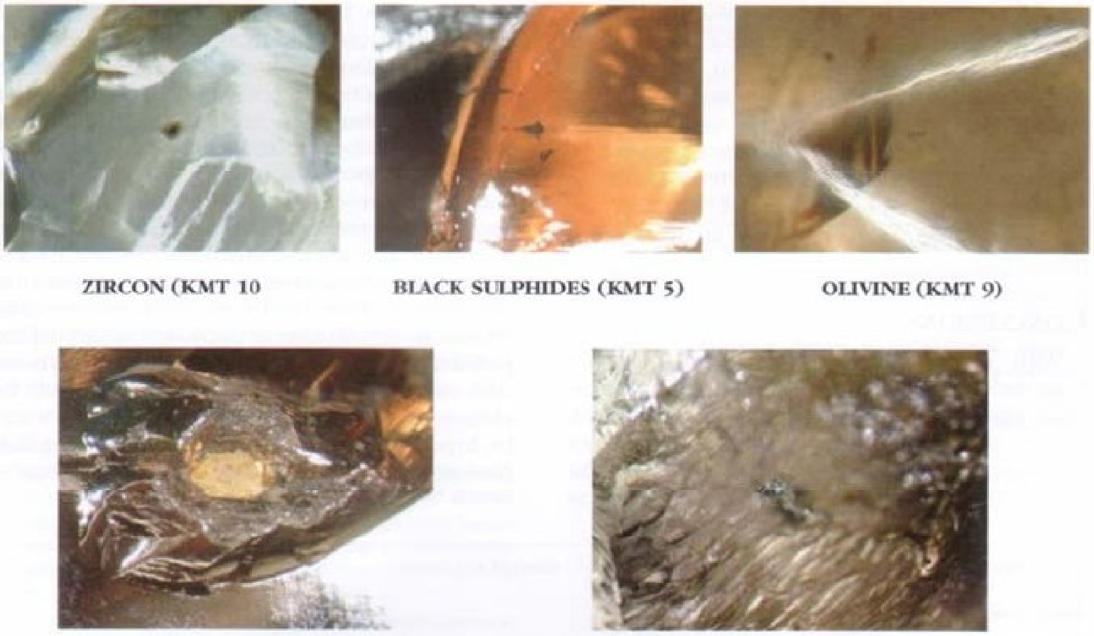
Inclusions

Using Raman spectroscopy, some of the inclusions that were located close to the surface of the diamonds were identified as diamond, zircon, perovskite and diopside in KMT 03, KMT 10, KMT 10 and KMT 04 respectively (See figure 9).

Other possible inclusions, which were recognised morphologically, included sulphides in KMT 05, and olivine or clinopyroxene (that also were observed using Laser Raman spectroscopy). But these inclusions were too deep within the diamonds to be accurately identified by Raman spectroscopy.

Discussion

The authors need to examine more samples of diamonds from this source to positively describe the morphology of these diamonds. This requirement also needs to be met before and definite statements can be made about their colours. However, the colour of good quality Kalimantan diamonds has been recorded as being blue, brown, yellow, green and colourless (Spencer *et al.* 1988). One sample (KMT 14), with morphology and surface features that differed from those of the other 13 diamonds in the study sample, has been questioned with respect to



ZIRCON (KMT 10 | BLACK SULPHIDES (KMT 5) | OLIVINE (KMT 9)

UNKNOWN MINERAL FILLING A PIT (KMT 5) | CLINOPYROXENE OR OLIVINE

Fig. 9 Inclusion found in diamond from Kalimantan.

being of Kalimantan origin. However, crosschecking by literature revealed that such features have been reported by Spencer *et al.* (1988) as characterising Kalimantan diamonds. Therefore, it is hypothesised that these differences in morphology and surface features may be a consequence of differences in their depositional environments, for KMT 14 showed no signs of being from the same environment as KMT 1-13. If the sources were different, this may reflect the possibility that the primary source rock was closer for KMT 14 than for KMT 1–13.

The presence of green and brown spots on the diamonds indicates the distinct possibility of close contact with the radioactive minerals for an extended period of geological time. The brown spots usually indicate a secondary thermal experience for the stone after its long contact with radioactive minerals. Green spots indicate that these diamonds only have been subjected to close proximity to radioactive minerals for extended periods (Vance 1973). Whereas it has been observed that green spots that have had contact with higher temperatures turned into brown spots (Bosshart 1993).

The deformation marks noted on the diamond surfaces of these Kalimantan diamonds were remarkably similar to those previously reported on brown diamonds that were recovered by dredge from the waters off Phuket in southern Thailand. However, the origin of these Thai dimaonds could not be determined (Wathanakul *et al.* 1998). Win *et al's* 2001 analysis of diamonds found in Myanmar concluded that the origin of Myanmar diamond could not be determined, except that they could come from the upper mantle region and were believed to have been associated with a peridotitic igneous rock. In contrast, Griffin *et al.* (2001) concluded, after studying diamond found in Thailand, Myanmar and Sumatra, that they had no connection with the lamproitic association of Argyle diamonds. Instead, these authors suggested a more probable link with the diamond from eastern Australia.

Specific surface features, of comparatively shallow depth, can be revealed by cathodoluminescence. Although the Kalimantan diamonds were few in number, CL confirmed the presence of type IaA and 1aAB diamond in these specimens, as well definite evidence of plastic deformation.

As for the inclusions, the KMT diamond samples were included by one very specific mineral (zircon) that likely indicated a peridotitic paragenesis for these diamonds (Meyer & Svisero 1975, Harris & Gurney 1979). The presence of other inclusions, such as olivine, also point toward peridotitic source. However, more studies on the inclusions in Kalimantan diamonds need to be completed - particularly using Laser Raman spectroscopy, Scanning Electron Microprobe analysis and Laser Ablation Inductively Coupled Plasma Mass Spectrometry - in order to fully determine the paragenesis, possible eruption age, even age/s of these historic diamonds. Unfortunately, these additional studies are beyond the scope of this paper at the present time.

Conclusions

With respect to their origin, Kalimantan diamonds will continue to provide great challenge for geologists and gemmologists. With this in mind, the senior author of this paper purchased 14 samples for investigation. The results obtained by this study are summarised in table 1, below. The diamonds were colourless to yellow and brown and their weights ranged from 0.03-1.82 ct. Due to simple economics, some of the larger diamonds could not be subjected to destructive analytical techniques. The surface features of these Kalimantan diamonds showed pronounced percussion scars (rhombic cracks). and a mixture of brown and green radioactive spots that were quite common in these diamonds. The intense brownish colour of these diamonds was related to the intensity of deformation lines visible on their surfaces. The inclusions found in these diamonds suggested the possibility of a peridotitic source. However, more data on carbon and nitrogen isotopes needs to be obtained before a source for these diamonds can be hypothesised. At a more basic level, a detailed geological survey of this diamondiferous region needs to be undertaken.

SAMPLE	WEIGHT (CARATS)	COLOUR	FORM	SURFACE FEATURES	TYPES OF DIAMOND	CL
KMT01	1.8250	Light Yellow	THH	Semi-transparent, brown spots, percussion scars.	Ia A or B?	Green
KMT02	1.6500	Brown	THH	Transparent, glossy surface, hillocks, cracks, trigon pits, brown spots, percussion scars.	Ia A or B?	Yellow rim around blue core
KMT03	1.6125	Orangy-brown	THH	Semi-transparent, crack, pit, percussion scars, network pattern, green spots, black inclusions.	IaAB	Blue and yellow patches
	1.2625	Light Brown	Macles	Semi-transparent, hillocks, crack & trigon pits, re-entrant angle appears like herring bone, percussion scars, green spots, frosted surface, black inclusions.	IaAB	Alternating Yellow and blue zonal bands
KMT05	0.8500	Dark brown	THH	Transparent, glossy surface, hillocks, crack, pits, green spots, percussion scar, black inclusions.	IaA	Blue and yellow patches
KMT06	0.6125	Light yellow	THH	Transparent, glossy surface, crack, trigon pits, green spots, percussion scars, network pattern.	IaA	Blue
KMT07	0.5745	Yellow	THH	Transparent, hillocks, glossy surface, crack, trigon pits, percussion scars.	IaA	Green
KMT08	0.3505	White	THH	Semi-transparent, hillocks, crack, trigon pits, brown spots, percussion scars.	IaA	Blue rim around yellow core
KMT09	0.3245	Brown	THH	Semi-transparent, cracks, red crystal inclusion.	Weak signal IaA ?	Yellow and blue zonal bands
KMT10	0.2865	Yellow	THH	Transparent, glossy surface, crack, hillocks, brown spots, black inclusions.	IaA	Green
KMT11	0.2010	Orangy-brown	–	Zircon	Nil	Orangy-yellow
KMT12	0.1355	Light yellow	THH	Semi-transparent, THH, hillocks, cracks, tetragonal pits, green spots, black inclusions.	Weak signal IaA ?	Blue
KMT13	0.1110	Colourless	THH	Semi-transparent, THH, hillocks, glossy surface, herring bone, many black inclusions.	IaA	Blue
KMT14	0.0320	Colourless	Octahedron	Transparent, hillocks, brown spots.	IaA	Green

Tay *et al.* 2004 THH - Tetrahexahedron

Table 1. The characteristics of Kalimantan diamonds examined during this study.

Acknowledgements

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Letter to the editor

19 Nov 04

Dear Editor,

In the Pink Diamond paper by Alex Bevan and Peter Downes, which was published in the recent issue of the journal, the scarcity of pink diamonds on display in museums is mentioned. We have two well stocked stores in Canterbury and Brighton (Melbourne) and would be only too happy to allow members and readers of *The Australian Gemmologist* to bring their loupes and get up close and very personally examine these beauties.

I am also sure that other members with stores in other states would be more than happy to extend the same hospitality, because after all, the Panelists chosen by Argyle Diamonds to represent these rare diamonds were selected because we have a great love for pinks and we want as many people to be aware of pink diamonds as possible. Finally, if anyone wants to understand the pink diamond colour grading system designed by Argyle, we have designed our own (not necessarily sanctioned by Argyle) chart which is on display at www.preciousmetals.com.au/fancycoloured.asp

Garry Holloway
Precious Metals, Victoria