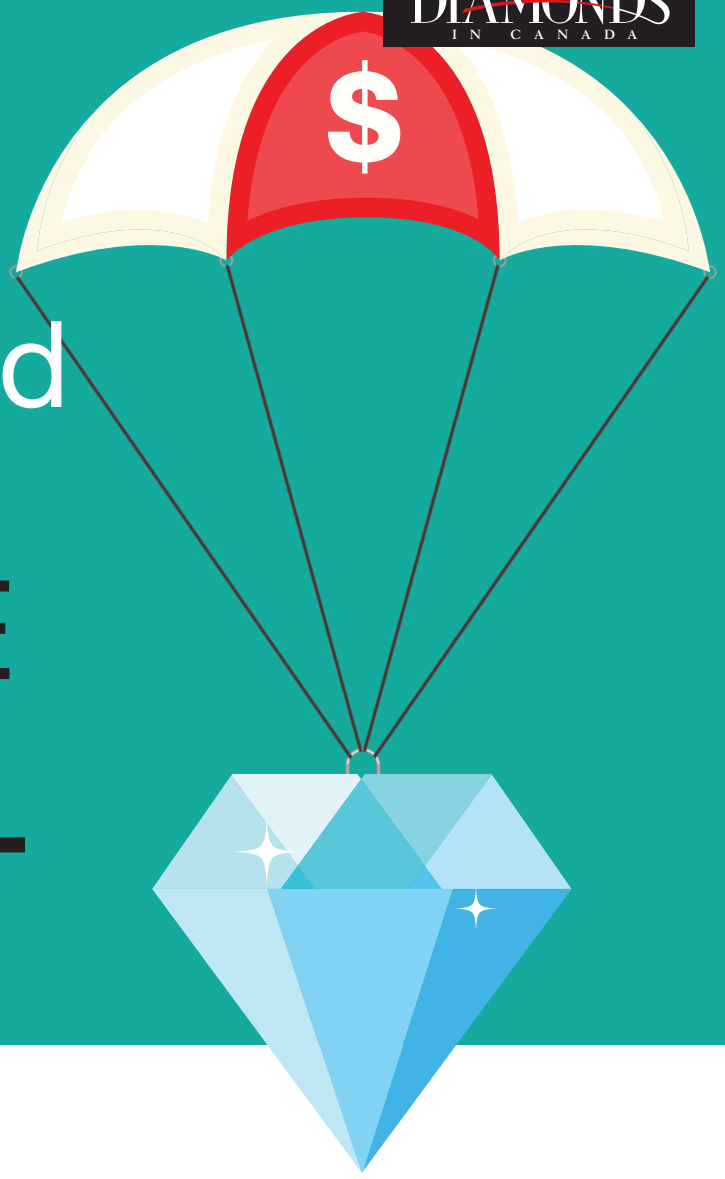
The price of lab-created diamonds CONTINUE TO FALL

Synthetics manufacturers eye high-tech market



credit: Abscent84/IStock photo

BY PAUL ZIMNISKY

The discount of gem-quality lab-created diamonds, manufactured for use in jewelry, relative to natural diamonds has doubled from around 10-20% a year ago to 30-40% today, according to a survey of prices.

For example, a white, 1-carat round diamond that is VS (very slightly included) in clarity, F-H (near-colourless to colourless) in color, VG-ideal cut, with no-to-low florescence was selling for around US$4,850 at the end of the first quarter of 2017 but is now US$4,350 — a 10% decline.

However, over the same period of time, the price of an equivalent natural diamond went from US$5,850 to US$6,150, representing an increase of about 5%. Thus, the discount of the lab-created diamond relative to the natural equivalent was roughly 17% at the end of the first quarter of 2017, but is now about 29%, a 71% year-over-year increase.

See table on page 17 for more examples.

Lab-created diamonds are becoming less expensive relative to natural equivalents as investment in lab-diamond production technology has rapidly improved production economics in just the last few years. This has led to rapid relative supply growth and an environment that is more price competitive for lab-diamond manufacturers.

However, actually gauging lab-diamond supply growth is difficult. The global proliferation of lab-diamond production facilities in recent years, from China to Russia to the U.S., has made tracking production figures challenging, especially given that the companies involved are private and proprietary in nature. Further complicating the process is the range in quality and scale at which lab diamonds are being produced.

Natural diamond production quality can be segmented as roughly 40% gem-quality, 20% near gem-quality, and 40% industrial-grade. Gem diamonds are used in jewelry, industrial-grade diamonds are used for abrasive and other industrial a pplication, and near-gem diamonds are used for both jewelry and more-specialized industrial application, with the split of use dependent on market prices and demand.

It is important to note that natural industrial-grade diamonds are simply seen as a byproduct, as the presence of gem-quality diamonds in a deposit are what drive the economics behind natural diamond production decisions.

Small parcels of near-gem-quality lab-created diamonds manufactured in China. Credit: Paul Zimnisky

In the case of lab diamonds, the ability to create higher-quality gem diamond product economically is a relatively recent development — within the last decade. Even with the recent developments in technology, current lab-created production of true gem diamonds represents less than 10% of global output, estimated at less than 5 million carats. That compares to natural gem-quality output of around 60 million carats (based on 40% of an estimated total natural production of 149 million carats in 2018).

The business of manufacturing lab-created diamonds for industrial application (typically referred to as synthetic diamond) has been around for decades, and the industry currently supplies more than 99% of global industrial diamond supply for use as abrasives (production is in the billions of carats, for context).

Lab production of near gem-quality diamonds is where supply analysis gets especially challenging. Producers of synthetic industrial-quality diamonds have been advancing their production capability through improved technology which has enabled them to increase the quality of their product from industrial to near-gem quality. Given that billions of carats of industrial-quality diamonds are produced each year, it becomes apparent that lab-created near-gem production could be in the hundreds of millions of carats; and some of this product is being passed off for use in jewelry — which is

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SYNTHETIC DIAMONDS TABLE

End-Q1 2018				YoY Change	End-Q1 2017		
Carat Weight[1]	Lab-created	Natural	LC Discount[2]	in Discount[3]	Lab-created	Natural	LC Discount
0.5	$1,090	$1,505	28%	147%	$1,315	$1,480	11%
1.0	$4,350	$6,150	29%	71%	$4,850	$5,850	17%
1.5	$7,275	$12,125	40%	100%	$9,500	$11,875	20%
Average			**32%**	**106%**			**16%**

**Diamond price figures based on average survey of prices by category sampled from prominent online diamond retailers.

[1]All diamonds sampled were round in shape, VS in clarity, F-H in color, VG-ideal cut, with no-to-low fluorescence. [2]"LC Discount" is discount of lab-created diamond relative to equivalent natural diamond. [3] "YoY Change in Discount" is the year-over-year percent increase in discount of lab-created diamond relative to equivalent natural (Analysis by Paul Zimnisky diamond.)

Parcels of natural diamonds produced in Russia and Canada.
Credit: Paul Zimnisky

primarily used to embellish larger stones and for use in pavé settings.

The natural diamond industry has been proactively developing affordable screening technology so that lab-created diamonds of all quality and sizes used in jewelry can be properly disclosed and sold as such.

As lab-diamond production continues to accelerate, it seems inevitable that the price spread between lab created and natural diamonds across all sizes and qualities will continue to widen, especially in the case of generic lab diamonds, those that are not supported by a manufacturer or retailer's brand.

Medium- to longer-term, expect the dialog surrounding lab-created diamonds to shift from jewelry to application in high-tech developments such as processing chips, optics, laser devices, and thermal conductivity equipment. The unique properties of diamond make the application potential exciting and wide, and the scientific and tech community has just begun to scratch the surface of its potential.

The high-tech industry enthusiastically awaits economically available mass-produced high-quality diamond, the lab-diamond manufacturers know this and most are just using jewelry as a stepping stone.

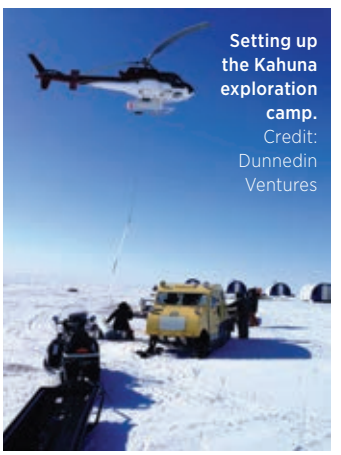
— Paul Zimnisky is an independent diamond industry analyst, author of the Zimnisky Global Rough Diamond Price Index and publisher of the subscription-based State of The Diamond Market monthly industry report. More information can be found at www.paulzimnisky.com.

CORPORATE PROFILE

Dunnedin tests new targets selected with Chuck Fipke's help

When your diamond exploration project catches the attention of diamond legend Chuck Fipke, you know you've got something big. That's the case for **Dunnedin Ventures** (TSXV: DVI) and its 100%-owned Kahuna project in Nunavut.

Fipke got involved with the project in 2015 when Kahuna till samples sent to his lab (CF Mineral Research) showed startling similarities in indicator mineral geochemistry to the Ekati mine, which Fipke co-discovered. Fipke has a 12% stake in the company and is also an advisor helping to guide Dunnedin's work program.



Setting up the Kahuna exploration camp. Credit: Dunnedin Ventures

Dunnedin first optioned the project in mid-2014. Over the next six months, it made quick progress at Kahuna thanks to the extensive work done by previous owners, who spent $30 million advancing the project. In early 2015, Dunnedin released an initial inferred resource of 4 million carats in 4 million tonnes grading 1.01 carats per tonne.

The current resource is contained in two kimberlite dykes: Kahuna and Notch, which have only been drilled to 80 metres depth and over a couple hundred metres of their 5.5-km and 3-km respective strike lengths. The project also contains other high-grade, diamond-bearing dykes, including PST and O7KD-24, which are open for expansion.

While probing the extension of these structures, Dunnedin's 2018 program — its first drill program ever at Kahuna — will focus on its potential for larger, diamond-bearing kimberlite pipes. Of 40 kimberlite targets so far identified, five were drilled in April, with more drilling slated for June when ground conditions improve.

Finally, infrastructure and ease of access to Kahuna are unusually good for an Arctic project. The 1,664-sq.-km project is located only 25 km from the community of Rankin Inlet and right next door to Agnico Eagle's Meliadine gold mine.