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At This Lab, No Stone Is Left Unturned or Unmarked

By MATTHEW HEALEY

Deep within the Diamond Tower, there is a room where no stone can hold its secrets for long.

Under heavy guard, every diamond, emerald, sapphire and other gem in this midtown Manhattan office building gets a thorough workover by experts and their instruments: hot and cold lasers, custom-built spectrometers and high-power microscopes.

In one corner of the Gem Certification and Assurance Lab, Dr. Lioudmila Tretiakova, one of the world's leading gemstone experts, cools a diamond with liquid nitrogen and examines a spectrometer reading showing the stone's color has been artificially lightened to increase its desirability. To prevent an unscrupulous seller overcharging for it, this fact will be noted on its certificate.

Tens of thousands of gems are inspected and certified annually by G.C.A.L. in a meticulous process that may soon bring profound change to the famously secretive diamond industry, which has long been averse to any measures that would give greater transparency to its dealings or allow auditing of the trade.

Diamond dealers around the world have always operated on trust and a handshake, but that is no longer good enough in a world where diamonds are sometimes traded to pay for civil wars and terrorism.

Dealers are also getting skittish in anticipation of a Warner Brothers movie to be released in early 2007 in which Leonardo DiCaprio plays a smuggler caught up in trafficking of diamonds for arms in Sierra Leone's civil war, which ended in

2002. Dealers worry that so-called blood diamonds would give diamonds from legitimate sources a stigma.

Diamond wholesalers have an agreement among about 90 countries that effectively ensures that rough — uncut — diamonds come from only legitimate sources. But not much has been done to reassure buyers of cut diamonds at the retail level.

That is where G.C.A.L. hopes to build its business, by issuing certificates that follow individual diamonds, from the time a rough stone is cut into a jewel through every subsequent sale, thus guaranteeing buyers they are getting "clean" diamonds.

Although there is practically no way to test a stone retroactively to determine its origin, certificates like those from G.C.A.L. offer a guarantee for any recently mined stone that conforms to this worldwide agreement, called the Kimberly Process.

The Diamond Trading Company, an arm of De Beers, the world's biggest diamond company, said in a recent statement concerning G.C.A.L. that "any initiative that supports ethical practices throughout the industry and which is to the ultimate benefit of the consumer, is to be commended." The statement added that the Diamond Trading Company, which is based in London, "would encourage G.C.A.L. not to stop at D.T.C. clients but to make this service available" to others.

While several companies offer gem certificates, Donald A. Palmieri, president of G.C.A.L., says his firm is the only one to guarantee its work. Another organization, the Gemological Institute of

America, was caught in a scandal a few months ago when several of its employees were accused of giving diamonds higher grades than they deserved. The institute does not guarantee its certificates.

One of the features making G.C.A.L. certificates effective is the use of a device called Gemprint, which, by shining a laser through a diamond, captures its unique sparkle pattern, just like a human fingerprint. A copy of this Gemprint image goes on each G.C.A.L. certificate, making it impossible to switch stones or claim a stone is better than it really is. The guarantee can only be thwarted by completely recutting a diamond, at a considerable loss in size and value.

An Israeli company originally developed the Gemprint technology 25 years ago, but it is only now coming into commercial use, partly because of resistance from the diamond trade and partly because "nobody could figure out what to do with it profitably," said Michael M. Haynes, the chief executive of Collectors Universe, firm that acquired G.C.A.L. and Gemprint late last year.

Mr. Palmieri, 59, a former diamond miner who is widely regarded as a gems expert, said Gemprint certificates had been accepted in law enforcement and the insurance business, because they aided in identifying stolen jewelry.

Getting the diamond trade to participate took longer, Mr. Palmieri said, because obtaining a certificate for every single cut stone obliges diamond dealers to provide an audit trail for the rough stones they handle. This is something that dealers have resisted in the past, he said.