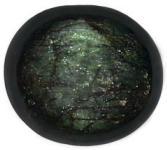
The Unique Cat's Eye Xenotime from Kuruvita, Rathnapura Region, Sri Lanka

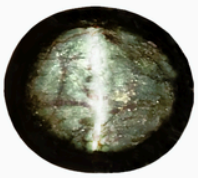
In the renowned gem-producing region of Kuruvita, Rathnapura, Sri Lanka, an extraordinary gemstone has recently been unearthed, captivating the attention of gemologists and enthusiasts worldwide. Weighing an impressive 38.88 carats, this gemstone boasts a distinctive brownish-green hue and a mesmerizing cat's eye effect, making it a truly rare find. Identified through Raman spectroscopy as xenotime, this gem's discovery marks a significant milestone in gemology.



"This 38.88-carat xenotime from Kuruvita is shown without the reflected light effect."

Unveiling the Gemstone's Characteristics

The xenotime gemstone, with a specific gravity of 4.86, has been meticulously cut and polished to showcase its unique features. The translucent stone reveals a captivating *cat's eye* effect, a phenomenon that enhances its allure and rarity. The brownish-green body color adds to its distinctiveness, setting it apart from other known gemstones.



"This 38.88-carat xenotime exhibits an exceptional cat's eye effect under reflected light."

- ***The Discoverers: Kasun G. Madivila and G. D. Nandana Edirisinghe***

- This remarkable gemstone was discovered by Kasun G. Madivila, GG (GIA), the founder of TGL Gem Lab in Sri Lanka, in collaboration with G. D. Nandana Edirisinghe, a renowned gem dealer and experienced rough gem identifier with over 40 years in the trade. Their combined expertise and dedication to gemology have led to the identification and documentation of this unique find. The testing and verification were conducted at TGL Gem Lab, with additional research and analysis performed by Mr. Naleen Jayasighe at the Gem and Jewelry Research Center in Kaduwela.

- TGL Gem Lab, one of the leading gemological laboratories in Sri Lanka, is renowned for its advanced research capabilities and commitment to gemstone study. The Rathnapura branch, in particular, functions as a study unit dedicated to discovering and analyzing new gemstone varieties. Under the leadership of Kasun G. Madivila, TGL Gem Lab is at the forefront of gemological research and innovation in Sri Lanka.

Physical and Optical Properties of Xenotime

XENOTIME IS A RARE EARTH PHOSPHATE MINERAL, PRIMARILY COMPOSED OF YTTRIUM ORTHOPHOSPHATE (YPO4). IT OFTEN CONTAINS TRACE AMOUNTS OF OTHER RARE EARTH ELEMENTS SUCH AS ERBIUM, DYSPROSIUM, AND YTTERBIUM. THE PHYSICAL AND OPTICAL PROPERTIES OF XENOTIME INCLUDE:

• Hardness: Xenotime has a Mohs hardness of 4.5, making it relatively hard and durable.
• Specific Gravity: The specific gravity of xenotime ranges from 4.4 to 5.1, with the discovered gemstone having a specific gravity of 4.86.
• Crystal System: Xenotime crystallizes in the tetragonal crystal system, typically forming prismatic or dipyramidal crystals.
• Refractive Index: Xenotime has a refractive index ranging from 1.720 to 1.815, contributing to its brilliance and optical properties.
• Optical Character: Xenotime is uniaxial positive, meaning it has two refractive indices with one being significantly higher than the other.



This image, copied from the Wikipedia article, depicts the tetragonal crystal system.

- ***Significance of the Discovery***
- The identification of this xenotime gemstone with a cat's eye effect is a noteworthy event in the gemological community. Xenotime is a rare mineral, and *the presence of a cat's eye effect in this mineral is exceedingly uncommon. This discovery may represent the only known cat's eye xenotime in the world,* adding to its significance and potential value. For further confirmation, the details of this rare find have been sent to the International Mineralogical Association in the USA and the GIA gemological laboratory.

CHEMICAL COMPOSITION AND CRYSTAL STRUCTURE

The primary chemical composition of xenotime is yttrium orthophosphate (YPO4). Its crystal structure is tetragonal, with each yttrium atom surrounded by eight oxygen atoms, forming a distorted square antiprism. This structure is responsible for the mineral's stability and its distinct physical properties. The presence of trace elements such as erbium, dysprosium, and ytterbium can influence the color and other optical characteristics of the gemstone.

G. D. Nandana Edirisinghe is no stranger to remarkable discoveries in the gem world. His notable contributions include the discovery of the world's largest serendibite gemstone at the time. The rough serendibite gemstone, found in Mudunkotuwa, Rathnapura region, and weighed 1.28 carats and, after cutting, yielded a 0.56-carat gem. This discovery was confirmed and published by the GIA in the 1996 edition of Gems & Gemology magazine, with the story sent to the GIA by Mr. Dunil Palitha, a respected gemologist who has since passed away. Additionally, Nandana, along with Dr. Burnred Prem, the former Director of the Geological Survey of Sri Lanka, discovered a 120-carat rough samarskite gemstone, marking the first find of this mineral in Sri Lanka after 168 years. Notably, samarskite is a radioactive mineral, adding an additional layer of intrigue and caution to its handling and study.

- ***Further Research and Implications***

The discovery of the cat's eye xenotime from Kuruvita, Rathnapura region, Sri Lanka, stands as a testament to the dedication and expertise of gemologists like *Kasun G. Madivila and G. D. Nandana Edirisinghe*. Their find not only enriches the world of gemstones but also highlights the endless possibilities that lie within the earth's crust. As this rare gemstone continues to be studied and appreciated, it serves as a reminder of the beauty and mystery that the world of gemology holds.

This article was compiled by Kasun G. Madivila, GG (GIA),