

SSEF conducts analysis of cobalt-blue spinel from a newly reported source in Tanzania



Figure 1: Cobalt-blue spinel from a newly reported source southeast of Mahenge in Tanzania, together with a vivid pinkish red spinel from a deposit in Epanko, which is close by to Mahenge, Tanzania. Photo: SSEF

BASEL, SWITZERLAND: MAY 16, 2022 – For several months already a supply of blue cobalt-bearing spinel has been appearing in the gem trade, including some stones of remarkable size –up to 40 carats – and quality. According to information from reliable sources, the source of the new find is a deposit located about 20 kilometres south-east of Mahenge, Tanzania, which for more than 20 years has been known for its red to pinkish red spinel of exceptional quality.

Detailed analyses of a selection of blue spinels from the newly reported source, conducted at the Swiss Gemmological Institute SSEF, has revealed that they contain cobalt as a main colouring element (chromophore), in combination with iron. This is similar to cobalt-spinel materials from sources in Sri Lanka, Pakistan and Vietnam.

Interestingly, reported SSEF, cobalt-blue spinel from the source in Tanzania contains quite characteristic inclusion features, such as oriented geometric lamellae with interference colours (Figure 2), together with lines of fine particles. Similar inclusion features have been described in red Tanzanian spinel from Morogoro. Additionally, colourless apatite and clusters of small zircon inclusions were identified by Raman spectroscopy.



Figure 2: Oriented lamellae with interference colours together with lines of fine particles are characteristic features of the newly reported cobalt-blue spinels from Tanzania. Photo: M.S. Krzemnicki, SSEF

Gem-quality cobalt-blue spinels are highly sought-after and valued, and consequently have been studied extensively by SSEF. Its laboratory has offered origin determination for cobalt-blue spinel for many years already.

“Cobalt-blue spinel from this new source in Tanzania is a welcome and attractive addition to the trade”, said Dr. Michael Krzemnicki, Director at the Swiss Gemmological Institute SSEF. ‘It is also fascinating material for us gemmologists to study, as these spinels display specific gemmological characteristics that are helpful for origin determination.”

A more detailed gemmological study of cobalt-blue spinel from this newly reported source in Tanzania will soon be published in a peer-reviewed gemmological journal.

About the SSEF

The Swiss Gemmological Institute SSEF, which is part of the Swiss Foundation for the Research of Gemstones (SSEF: Schweizerische Stiftung für Edelstein-Forschung), was founded by trade organisations in 1972 and works independently on a scientific basis. It is structured as a foundation under the aegis of Switzerland's Federal Department of Home Affairs. The function of its laboratory is to analyse precious stones and issue test reports for diamonds, coloured stones and pearls. Members of SSEF Laboratory are also engaged in research and education, in connection with leading universities or with other gemmological laboratories