

Title : Gemological Characteristics, Chemical Composition and Cause of Color of Tsavorite claimed to be from Tanzania

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Major : Gemology

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ABSTRACT

The specimens of tsavorite from Tanzania, were studied for their gemological properties, chemical compositions and cause of coloration in gemstones. The samples are light green to dark green, transparent to translucent. The samples were 0.621 – 4.950 grams with specific gravity in range of 3.271 – 3.598 and reflective index were 1.743. Tsavorite were inert in longwave and shortwave ultraviolet light. Absorption spectra in range of 400 – 430 and 680 – 700 nm. The studied for their internal characteristics with microscope were found, including fingerprint contaminants composed of small crystals or crystallites, solid inclusion and fracture. The studied of color formation in the sample using a UV-VIS-NIR spectrophotometer revealed absorption spectra at wavelengths of 425 and 609 nm, which are caused by V^{3+} . Additionally, the sample was examined using a scanning electron microscope equipped with energy dispersive spectroscopy; SEM-EDS, which showed that it consisted of 32.61% oxygen, 20.84% carbon, 19.51% calcium, 15.63% silicon, 9.59% aluminum, and 1.04% vanadium.

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