

IMPLEMENTATION OF A GEMOLOGICAL LABORATORY IN SCIENTIFIC POLICE: ARGUMENTS, RESULTS AND PERSPECTIVES

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ABSTRACT

The present work introduces theoretical and practical foundations for the creation of a Laboratory of Forensic Gemology in the sphere of the Scientific Police of Goiás, showing results obtained with essential analytical instruments, the challenges inherent to the exams, and the importance of constructing an integrated network, among the Brazilian scientific polices, for the purpose of analyzing precious stones and metals from criminal activities.

Keywords: forensic gemology, precious stones, gemological laboratory.

Introduction

Brazil is home to a gemological province that stands out on the international scene, both for its vast production and for the immense diversity of precious stones. Such mineral wealth enables the occurrence of related criminal activities, notoriously, illegal mining and working conditions analogous to slavery.

Another factor of interest to police investigation resides in the fact that a gem is a perfect object for money laundering: small, easy to transport, having a high market value and a low traceability. In a country of global expression, also, in the indexes of organized crime¹, a forensics expert performance in the area proves to be imperative.

Objectives

This study aims to present preliminary results obtained at the Laboratory of Forensic Gemology of SPTC/GO, arousing the debate of within a criminal expertise area that is still incipient, in spite of being extremely relevant for the economic and social context of the country.

Methodology

Eight cut green gemstones, associated to a drug trafficking case, were submitted to examinations using a hand magnifying glass, refractometer, polariscope, calcite dichroscope, precision scale

with density kit, Chelsea filter, stereomicroscope and ultraviolet radiation, intending to determine their mineral composition.

Results and Discussion

The use of gemological analysis instruments allowed the identification of treated natural emeralds. All samples showed unequivocal refractive indexes; however, the measurement of specific gravities proved to be dubious, due to their reduced carat measurements. Pleochroism, anisotropy, fluorescence and appearance under the Chelsea filter lens were also consistent with those observed in the specialized literature^{2,3}. The final diagnosis resulted from the analysis of their inclusions, which determined their origin in nature, as well as revealed the presence of treatments for filling fractures and color improvement.

Conclusion

In view of the above, it becomes clear that, using specific but not expensive equipment, plus the adequate qualification of enthusiastic criminal experts, it is possible to obtain conclusive results, not requiring higher costly analytical instruments. This argument evokes the plausibility of integrating the Brazilian scientific polices into a collaborative network specialized in combating crimes related to gems and precious metals.

References

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Realização