



Criminalistics Section – 2005

B20 Microspectral Analysis of Gemstones and the Applications to Forensic Science

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After attending this presentation, attendees will learn the techniques used to prepare and analyze gemstones and to understand and interpret the spectral data.

Since gemstones are often stolen, this presentation will impact the forensic community and/or humanity by giving the forensic community the skills to identify and characterize gemstones as criminalists comes across them in their work.

The theft of gemstones has occurred since time immemorial and has become quite romanticized. The topic has been the subject of literature and film from "Le Count du Monte Cristo" to "The Pink Panther." Yet the theft of gemstones is quite a real issue and there are real problem in identifying gems. In addition, because of their value, gems are often counterfeited with less precious materials. It is important for the forensic scientist to be able to confirm the identity of precious stones and their less precious substitutes.

The purpose of this paper is to show the techniques used for the forensic analysis of gemstones by UV-visible-NIR microspectroscopy and microfluorometry. These techniques include sample preparation, methods of spectral data acquisition and, of course, spectral analysis and interpretation. The talk will also review the data from several types of gemstones in order to aid the examiner in identifying them in casework.

Microspectrophotometer, Gemstones, UV-Visible-NIR