

Seminar Announcement

Department of Chemistry and Biochemistry and
The International Forensic Research Institute

Frontiers in Forensic Science Seminar Series

“Atomic Spectroscopy in Forensic Science: It's
Elemental My Dear Watson”

By: **Dr. Robert D. Koons, Counterterrorism and
Forensic Science Research Unit, FBI Laboratory,
Quantico, VA**

Time and Date

Friday, Dec. 5, 2008 3:30 pm

Location

Werthiem Conservatory (WC)

Sponsored by IFRI, Refreshments will be served



Robert D. Koons, PhD
Research Chemist
FBI Laboratory

Bio:

Dr. Koons has over 30 years experience in the development and application of analytical methods for the determination of element concentrations in a wide range of samples of environmental and forensic interest. He obtained a BS degree in Chemistry from Duke University and MS and PhD degrees in Soil Science from the University of Wisconsin-Madison. As a graduate student, he studied the application of neutron activation analysis and x-ray fluorescence to analysis of sediments, soils, flyash, and geological materials. Dr. Koons' first professional position was as an Assistant Professor of Soil Chemistry and the Director of the Life Sciences and Analytical Laboratory at the University of Maine in 1979-1982. There, he automated the soil and fertilizer testing laboratories using one of the first commercially available ICP-AES instruments. Dr. Koons joined the Federal Bureau of Investigation Laboratory in 1982 and since that time has explored the uses of a variety of analytical instrumentation for making elemental measurements on samples of forensic interest. He will use some of his results to illustrate both the tremendous power of multielemental analytical techniques for source attribution of materials as well as provide insight into some of the misconceptions commonly portrayed in the current popular movie and television media.

Abstract:

“Atomic Spectroscopy in Forensic Science: It's Elemental My Dear Watson”

Dr. Robert D. Koons, Counterterrorism and Forensic Science Research Unit, FBI Laboratory, Quantico, VA 22135

The scientific examination of crime evidence has been portrayed in many books, movies, and television shows from *Sherlock Holmes* to *Quincy* to *CSI*. The popularity of these portrayals of criminalistics has served to raise public interest in the activities of the crime laboratory and the forensic scientist. However, shows such as *CSI* are designed to provide entertainment and they do not portray a realistic picture of the activities of the scientist in the crime lab. The evaluation of evidence is not characterized by “Aha, the evidence proves that he's the bad guy” moments, but rather by the rigorous application of scientific principles to test specific hypotheses by making analytical measurements under a controlled set of conditions. This talk will concentrate on one aspect of chemical criminalistics; namely, the use of the concentrations of selected elements to indicate potential sources of materials. Examples drawn from FBI Laboratory research and case work will be used to illustrate how powerful multi-elemental profiles of evidentiary materials can be for elucidating their sources. On the other hand, the potential for the “wow factor” of complex analytical measurements to give the results too much significance in the minds of a scientifically naive court and jurors will also be discussed.