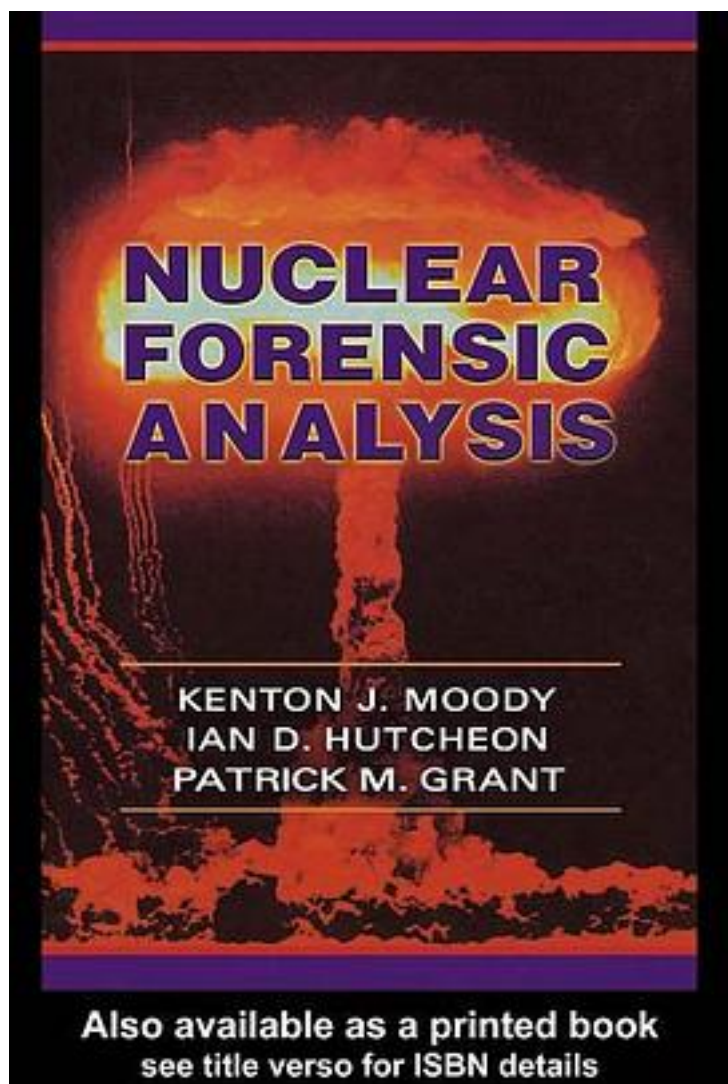


# Nuclear Forensic Analysis



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出版者:CRC Press

出版时间:2005-2-28

装帧:Hardcover

isbn:9780849315138

This book provides a primary reference source for nuclear forensic science, including the vastly disciplinary nature of the overall endeavor for questioned weapons of mass-destruction specimens. Nothing like this exists even in the classified material. For the first time, the fundamental principles of radioforensic analysis, all pertinent protocols and procedures, computer modeling development, interpretational insights, and attribution considerations are consolidated into one convenient source. The principles and techniques so developed are then demonstrated and discussed in their applications to real-world investigations and casework conducted over the past several years.

#### 作者介绍:

Kenton J. Moody earned a bachelor of science degree in physical chemistry from the University of California at Santa Barbara in 1977. He attended graduate school at UC Berkeley, where he studied with Nobel Laureate Glenn Seaborg (the discoverer of plutonium), and received a Ph.D. in 1983 with a specialty in actinide radiochemistry. Following a two-year stay at the Gesellschaft fuer Schwerionenforschung (a German accelerator laboratory), he joined the Nuclear Chemistry Division at Lawrence Livermore

National Laboratory (LLNL) in 1985, where he has performed extensive diagnostic radiochemical measurements in support of various national security programs.

He is currently the technical lead for two research groups at LLNL, one focused on the radiochemistry of the weapons in the U.S. nuclear stockpile and the other on basic research on the heaviest elements (the latter in collaboration with physicists at accelerator

laboratories in the former Soviet Union). In addition to numerous classified reports detailing the performance of nuclear explosive devices, he has co-authored more than ninety refereed journal publications in the subject areas of the decay properties of the heaviest elements, nuclear reaction mechanisms, fission, and nuclear structure. He has co-discovered four chemical elements and more than three dozen heavy-element isotopes.

Ian Hutcheon is currently the deputy director of the Glenn T. Seaborg Institute and the scientific capability leader for chemical and isotopic signatures in the Chemical Biology

and Nuclear Science Division at the Lawrence Livermore National Laboratory. Prior to

this position, he was a Senior Research Associate in the Division of Geological and Planetary Science at the California Institute of Technology in Pasadena. His technical training is in physics and geochemistry: he received an A.B. at Occidental College in 1969 and a Ph.D. in physics from the University of California at Berkeley in 1975. He then spent two years as a post-doctoral fellow and five years as a senior research associate in the Enrico Fermi Institute at the University of Chicago.

He has authored over 100 publications in peer-reviewed journals in the areas of secondary-ion mass spectrometry, the early history of the solar system, and nuclear forensic analysis. He also serves on the review panels of the NASA Cosmochemistry Program and the Sample Return Laboratory Instruments and Data Analysis Program. He

is a member of the American Geophysical Union, the Meteoritic Society, and the Microbeam Analysis Society.

Patrick M. Grant earned B.S. (1967) and Ph.D. (1973) degrees in chemistry from the University of California. He worked in radiochemistry and nuclear medicine at Los Alamos National Laboratory for eight years, and was an associate group leader for medical radioisotope research and production. He then spent two years in the oil, gas, and

minerals industry at Chevron Research Company. He has been a staff member at Livermore National Laboratory since 1983, serving as the deputy director and special operations and samples manager of the Forensic Science Center. Pat has also held positions as a senior nuclear reactor operator and as an adjunct university professor of chemistry. He has served as a subgroup member of the U.S. National Security Council's

Coordinating Committee on Terrorism and is a member of Livermore's Emergency Response Team. He is also a charter member of the FBI Scientific Working Group on the

Forensic Analysis of Radiological Materials.

In addition to numerous classified and law-enforcement reports, he has authored or co-

authored more than 100 refereed publications in the open literature in the subject areas of chemistry, physics, nuclear medicine, thermodynamics, spectroscopy, forensic science, and incident analysis. He has won the Health Physics Society's Silverman Award in radiobiology and a Department of Energy Award of Excellence. He is a Fellow of both the American Academy of Forensic Sciences and the American College of Forensic Examiners International, and is a member of the editorial board of the Journal of Forensic Sciences. One of his unclassified investigations, a scientific explanation for the Riverside Hospital Emergency Room "Mystery Fumes" incident, has been highlighted in popular magazines and been the subject of world-wide television features.

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