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Analysis And

Detection

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Dt

It is essential that those in the criminal justice system understand the tasks that police dogs perform and

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the evidence that
their work
produces. Police
and Military Dogs:
Criminal Detection,
Forensic Evidence,
and Judicial
Admissibility
examines the use of
police and military
dogs for a wide
variety of functions
and explores canine
biology and be

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This book represents a collection of papers presented at the 4th International Symposium on Analysis and Detection of Explosives held at the Mitzpeh Rachel Kibbutz Guesthouse in Jerusalem, September 7 to 10, 1992. The

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Symposium was attended by 150 participants from 20 countries and 50 lectures were given including 4 invited keynote lectures.

The purpose of the Symposium, as the previous Symposia, was to present and to discuss new approaches, new applications, new

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methods and techniques in analysis and detection of explosives. The Symposium was, according to the feedback received from many participants, very successful and met the anticipated expectations. New collaborative

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initiatives between various laboratories from different countries were formed, which is a necessity in our common goals of law enforcement, aviation security and environmental quality, issues which are closely related to the analysis of

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explosives. I would like to extend my thanks to the Weizmann Institute of Science and the Israel National Police for sponsoring the Symposium, to the contributing Institutions and Agencies for making this Symposium

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financially possible, and to the members of the International Committee for helpful advice. I am most thankful to my colleagues from the Organizing Committee, especially Dr. Joseph Almog and Dr. Shmuel Zitrin from the Israel National Police, for

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helping in the organization of this Symposium.

Detection canines have been utilized throughout the world for over a century, and while numerous attempts have been made to replicate the canine ' s ability to detect substances by mechanical

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means, none has
been as successful.

The olfactory
system is a highly
intricate and
sophisticated design
for chemical
sensing, and the
olfactory capacity
of many animals,
including canines, is
considered
unmatched by
machine due to not

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only their great sensitivity and superior selectivity but also their trainability and mobility. These unique features have led to the use of such animals as "whole-animal" biosensors.

Amplifying the benefits and diminishing the

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limitations of
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detection canines'
interdisciplinary
research is crucial
to understanding
canine olfaction and
detection and
enhancing this
powerful and
complex detector.
The past 50 years
have produced vast
advancements in
animal

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behavior/training technology to develop canines into more proficient and reliable sensors, while scientific research has provided tremendous support to help practitioners better understand how to utilize this powerful sensor. This book

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assembles a diverse group of authors with expertise in a variety of fields relating to detection canines and the chemical sensing industry, including both research and operational perspectives on detection canines. It illustrates how science enhances

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our understanding of how canines are employed for solving some of the world ' s leading detection challenges.

Final Work Plan for the Ordnance and Explosive (OE) Response Action for the Engineering Evaluation and Cost Analysis (EE/CA)

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Trends in Drug
Testing in Clinical
and Forensic
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Handbook on
Radiation Probing,
Gauging, Imaging
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Profile for
2,4,6-trinitrotoluene
Counterterrorist
Detection

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Anti-personnel
Landmine Detection
for Humanitarian
Demining
Due to its enormous
sensitivity and ease of
use, mass
spectrometry has
grown into the
analytical tool of
choice in most

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industries and areas
of research. This
unique reference
provides an extensive
library of methods
used in mass
spectrometry,
covering applications
of mass spectrometry
in fields as diverse as
drug discovery,
environmental

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science, forensic science, clinical analysis, polymers, oil composition, doping, cellular research, semiconductor, ceramics, metals and alloys, and homeland security. The book provides the reader with a protocol for the technique

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described (including sampling methods) and explains why to use a particular method and not others. Essential for MS specialists working in industrial, environmental, and clinical fields.

Detection of Bulk
Explosives:

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Advanced
Techniques against
Terrorism contains
reviews of: existing
and emerging bulk
explosives detection
techniques; scientific
and technical policy
of the Federal Border
Service of the Russian
Federation;
challenges in

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application and evaluation of EDS systems for aviation security; multi-sensor approach to explosives detection. There are also reports devoted to the following individual explosive detection techniques: X-ray systems in airports;

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neutron in, gamma
out techniques;
neutron and gamma
backscattering;
nuclear quadruple
resonance, including
remote NQR; sub-
surface radars;
microwave scanners;
laser-induced burst
spectroscopy (LIBS);
acoustic sensors;

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nonlinear location (NUD); systems for localization and destruction of explosive objects.

Nuclear quadrupole resonance (NQR) a highly promising new technique for bulk explosives detection: relatively inexpensive, more compact than

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NMR, but with considerable selectivity. Since the NQR frequency is insensitive to long-range variations in composition, mixing explosives with other materials, such as the plasticizers in plastic explosives, makes no difference. The NQR

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signal strength varies linearly with the amount of explosive, and is independent of its distribution within the volume monitored. NQR spots explosive types in configurations missed by the X-ray imaging method. But if NQR is so good,

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why it is not used everywhere? Its main limitation is the low signal-to-noise ratio, particularly with the radio-frequency interference that exists in a field environment, NQR polarization being much weaker than that from an external

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magnetic field. The distinctive signatures are there, but are difficult to extract from the noise. In addition, the high selectivity is partly a disadvantage, as it is hard to build a multichannel system necessary to cover a wide range of target

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substances.

Moreover, substances fully screened by metallic enclosures, etc. are difficult to detect. A workshop was held at St Petersburg in July 2008 in an attempt to solve these problems and make NQR the universal technique

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for the detection of bombs regardless of type. This book presents the essentials of the papers given there.

Proceedings of a
Conference Held
19-20 July 1992, San
Diego, California
Neutron Imaging
Analytical

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Instrumentation
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Handbook

Criminal Detection,
Forensic Evidence,
and Judicial
Admissibility
Explosives Detection
using Magnetic and
Nuclear Resonance
Techniques
Mass Spectrometry
Handbook

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With the ever-spreading problem of violent crime in today's society, techniques to assist forensic scientists and other law enforcement personnel have come to the forefront. With improvement in collection methods and analytical tools to conduct more thorough analyses, gunshot residue examination has

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*made a dramatic impact
as an area of trace
eviden*

*This book comprises a
collection of well-
researched essays on
selected contemporary
economic and finance
issues in China, making
a timely contribution to
the intellectual
intercourse regarding
the implications of
China's rise. These*

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essays analyze issues related to the state of China's ecology, real estate market, inbound and outbound FDI, income inequality, etc., and offer analysis on the policy and institutional causes of those issues. Readers will be able to infer their implications for business opportunities in China and the tradeoff /

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tension between economic growth and social welfare.

Moreover, this book introduces an array of data and data sources useful to scholars and practitioners interested in studying the Chinese model of economic growth. This book will be a valuable resource to journalists and scholars trying to gain

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*insight into China's
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extraordinary pace of
growth in the past three
decades.*

*Anti-personnel
Landmine Detection for
Humanitarian Demining
reports on state-of-the-
art technologies
developed during a
Japanese National
Research Project
(2002–2007). The
conventional method of*

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landmine detection is using metal detectors to sense the metal in mines, but often other metal fragments in minefields camouflage landmines and hinder progress using this form of demining. The challenge is to develop detection systems that can discriminate between AP landmines and random metal

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fragments. The JST adopted research proposals and the results are reported here. This book concentrates on aspects of three approaches to AP mine detection: enhancing and confirming the results of metal-detection scans using GPR; using robot vehicles and manipulators to operate

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*within minefields
remotely; and methods
of sensing the explosives
within mines. Results
are presented in the
fields of GPR, nuclear
quadrupole resonance,
neutron thermal
analysis and biosensors.
The integration of these
methods for workable
robot operation is
demonstrated. The
project was carried out*

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*in conjunction with mine
action centers in*

*Croatia, Cambodia and
Afghanistan. Evaluation
data from field trials are
also given.*

*Detection of Liquid
Explosives and
Flammable Agents in
Connection with
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*Recent Advances in
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Strategies*

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of Clandestine
Laboratories*

*Handbook of Green
Analytical Chemistry*

**Forensic
Chemistry, Third**

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Edition, the new edition of this ground-breaking book, continues to serve as the leading forensic chemistry text on the market. Fully updated, this edition describes the latest advances in current forensic

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**chemistry
analysis and
practice. New
and expanded
coverage
includes rapid
advances in
forensic mass
spectrometry,
NMR, and novel
psychoactive
substances
(NPSs). Topics
related to seized**

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drug analysis,

toxicology,

**combustion and
fire**

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explosives, and

firearms

discharge

residue are

described and

illustrated with

case studies. The

role of statistics,

quality

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assurance/quality control,

uncertainty, and

metrology are

integrated into

all topics. More

pharmacological

and toxicokinetic

calculations are

presented and

discussed.

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along with

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***graphs,
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worked example
problems, and
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are used to show
how analytical
chemistry is
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forensic practice.
Topics covered
offer students
insight into the
legal context in***

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which forensic chemistry is conducted and introduces them to the sample types and sample matrices encountered in forensic laboratories. Semiannual, with semiannual and annual indexes. References to all

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scientific and technical literature coming from DOE, its laboratories, energy centers, and contractors. Includes all works deriving from DOE, other related government-sponsored information, and foreign

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**nonnuclear
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information.**

**Arranged under
39 categories,
e.g., Biomedical
sciences, basic
studies;
Biomedical
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studies; Health
and safety; and
Fusion energy.
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report number
indexes.**

**The emerging
field of green
analytical
chemistry is
concerned with
the development
of analytical
procedures that**

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***minimize
consumption of
hazardous
reagents and
solvents, and
maximize safety
for operators and
the environment.
In recent years
there have been
significant
developments in
methodological
and***

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**Explosives Dt
technological
tools to prevent
and reduce the
deleterious
effects of
analytical
activities; key
strategies
include
recycling,
replacement,
reduction and
detoxification of
reagents and**

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**solvents. The
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and recent

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of detailed

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***by international
specialists in the
field, discuss the
fundamental
principles of
green analytical
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present a
catalogue of
tools for
developing
environmentally
friendly
analytical***

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Process: Green**

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techniques and
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direct analysis of
samples, green
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molecular**

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electroanalytical
methods.**

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automation,
miniaturization
and
photocatalytic
treatment of**

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wastes. Fields of**

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bioanalytical

chemistry,

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environmental

analysis and

industrial

analysis. This

advanced

handbook is a

practical

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**resource for
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chemists who are
interested in
implementing
green
approaches in
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Volume 4:
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Industry and the
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of Gas Chromato
graphy-Mass
Spectrometry
Since their debut

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*in the late 1920s,
particle
accelerators have
evolved into a
backbone for the
development of
science and
technology in
modern society.
Of about 30,000
accelerators at
work in the world*

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today, a majority is for applications in industry (about 20,000 systems worldwide). There are two major categories of industrial applications: materials processing and treatment, and

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materials analysis.

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Materials

processing and

treatment

includes ion

implantation (semi-

conductor

materials, metals,

ceramics, etc.)

and electron

beam irradiation

(sterilization of

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*medical devices,
food*

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pasteurization,

treatment of

carcasses and

tires, cross-linking

of polymers,

cutting and

welding, curing of

composites, etc.).

Materials analysis

covers ion beam

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analysis (IBA), non-destructive detection using photons and neutrons, as well as accelerator mass spectrometry (AMS). All the products that are processed, treated and inspected

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*using beams from
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particle*

*accelerators are
estimated to have
a collective value
of US\$500 billion
per annum
worldwide.*

*Accelerators are
also applied for
environment
protection, such*

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*as purifying
drinking water,
treating waste
water, disinfecting
sewage sludge
and removing
pollutants from
flue gases.*

*Industrial
accelerators
continue to
evolve, in terms of*

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*new applications,
qualities and
capabilities, and
reduction of their
costs.*

*Breakthroughs are
encountered
whenever a new
product is made,
or an existing
product becomes
more cost*

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effective. Their impact on our society continues to grow with the potential to address key issues in economics or the society of today. This volume contains fourteen articles, all

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Nuclear Structure

of the Atom for

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(Chris Jeynes,

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Annika

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Hunt)Review of

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*Spectrometry and
Its Applications*

*(Jiaer Chen, Zhiyu
Guo, Kexin Liu and
Liping*

Zhou)Electron

*Accelerators for
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*(Andrzej G Chmiel
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Radiation Damage

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*in Structural
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*Readership:
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engineers in
accelerator
science and
industry.*

*Keywords: Particle
Accelerators; Mate
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and Treatment; Ma*

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Analysis; Industrial Accelerators; LHC; Environment Reviews: "The book is a very helpful way to be introduced in the world of accelerators as powerful tools to carry out quite a big number of

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*applications that
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scientists. The book helps researchers to compare the advantages and disadvantages of all available methods in detecting explosives and, in effect, allows them to choose

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*the correct
instrumental
screening
technology
according to the
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trace/contact or
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*techniques
applicable to
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transportation,
human and
freight) and
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both current
techniques and
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stages of*

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Provides detailed
descriptions of
every technique,
including its
principles of
operation, as well
as its applications
in the detection of
explosives
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presents a*

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*comprehensive
and up-to-date
account of the
theory (physical
principles),
design, and
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implementations
of various sensors
for scientific,
industrial, and
consumer*

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applications. This latest edition focuses on the sensing technologies driven by the expanding use of sensors in mobile devices. These new miniature sensors will be described, with an

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emphasis on smart sensors which have embedded processing systems. The chapter on chemical sensors has also been expanded to present the latest developments.

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Digital systems, however complex and intelligent they may be, must receive information from the outside world that is generally analog and not electrical. Sensors are interface devices between

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various physical values and the electronic circuits that "understand" only a language of moving electrical charges. In other words, sensors are the eyes, ears, and noses of silicon chips. Unlike other books

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*on sensors, the
Handbook of
Modern Sensors is
organized
according to the
measured
variables
(temperature,
pressure, position,
etc.). This book is
a reference text
for students,*

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modern
instrumentation
(applied physicists
and engineers),
sensor designers,
application
engineers and
technicians whose
job it is to
understand, select*

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and/or design
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sensors for

practical systems.

*Development of
High-intensity D-D*

and D-T Neutron

Sources and

Neutron Filters for

Medical and

Industrial

Applications

Detection of Bulk

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St. Petersburg,
Russia 16-21 June
2003
Oak Ridge Multiple
Attribute System
(ORMAS) for Pu,
HEU, HE, Chemical*

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Agents, and Drugs

Physics, Designs,

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covers the latest

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spectrometry in

scientific research.

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information on the broad range of mass spectrometry techniques and configurations, data analysis and practical applications. Each volume contains contributions from eminent researchers who present their findings in an easy to read format. The

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multidisciplinary nature of the works presented in each volume of this book series make it a valuable reference on mass spectrometry to academic researchers and industrial R&D specialists in applied sciences, biochemistry, life

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proteins and
peptides -

Chemometrics as a
powerful and
complementary tool
for mass
spectrometry
applications in life
sciences - Recent
developments of
allied techniques of
qualitative analysis
of heavy metal ions
in aqueous

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solutions with special reference to modern mass spectrometry - New techniques and methods in explosive analysis. Now in its second edition, Forensic Investigation of Explosions draws on the editor's 30 years of explosives casework

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experience,
including his work
on task forces set
up to investigate
major explosives
incidents. Dr.
Alexander
Beveridge provides
a broad,
multidisciplinary
approach,
assembling the
contributions of
internationally

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Abstracts

Year in Review
Volume I: Basics
and Techniques
The detection
of hidden
explosives has
become an issue
of utmost
importance in
recent years.
While terrorism

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is not new to the international community, recent terrorist attacks have raised the issue of detection of explosives and have generated a great demand

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for rapid,
sensitive and
reliable
methods for
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this area of
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techniques

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quadrupole

resonance, x-

ray diffraction

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millimeter-wave
imaging,
terahertz
imaging and
laser
techniques).

This book will
be of interest
to any
scientists
involved in the
design and
application of

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security
screening
technologies
including new
sensors and
detecting
devices which
will prevent
the smuggling
of bombs and
explosives. *

Covers latest
advances in

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vapor and trace
detection

techniques and
bulk detection
techniques *

Reviews both
current

techniques and
those in

advanced stages
of development

* Techniques
that are

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described in detail, including its principles of operation, as well as its applications in the detection of explosives
Dogs detect scent from a source that is carried to them

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in a plume by the wind. The most important tool for a detector dog handler to have on searches is a knowledge of scent plume movement or "scent dynamics" (the science of

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scent
movement). Such
knowledge
resides
primarily in
scientific
journals that
are largely
inaccessible to
detector dog
handlers and
written in
language that

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is difficult to understand.

Detector Dogs
and the Science
of Scent

Movement: A
Handler's Guide
to Environments
and Procedures
retrieves,
reviews, and
interprets the
results of

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pertinent
scientific
research on
scent dynamics
and presents
these results
in terms that
are easier for
handlers to
understand.
Information on
the physiology
of the dog's

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nose, their sense of smell, and the properties of scent provide the essential information on the process of scenting. The composition of training aids for explosives, narcotics,

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human remains
and other
sources is
discussed.

Recommendations
are made on the
use of training
aids, their
placement
during
training, and
the resulting
availability of

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scent.

Potential

problems and
handler errors
in the use of
training aids
are also

examined. The
characteristics
of scent plumes
and how wind
influences
their movement

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are a key focus
of the book.

The primary
task for the
handler is to
get the dog
into the scent
plume so that
the dog can
detect the
scent and
follow it to
the source the

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handler seeks. As such, a knowledge of scent and scent plume movement will vastly improve the ability of the handler to accomplish this task. The influence of weather and

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physical settings such as terrain, vegetation, ground cover, soil and water on scent movement are examined in detail.

Strategies for searching, detecting, and

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locating
sources in all

physical
settings are
presented.

Specific
effects
associated with
hills and
mountains,
fields and
forests, bare
soils and soils

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covered by
vegetation,
different soil
types, and
lakes and
rivers are
examined in
detail. This
includes
specific
recommendations
are made about
weather and

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physical settings that result in higher probability of success on searches.

Detector Dogs and the Science of Scent Movement will be a vital resource for K9

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handles in the private and public sectors—including in Homeland Security, law enforcement, and military settings—as well as a useful guide for lawyers, forensic, and

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investigative
professionals
who need to
better
understand K9
operations.

The concept for
the Oak Ridge
Multiple
Attribute
System (ORMAS)
is a Nuclear
Materials

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Identification
System (NMIS)

time-dependent
coincidence
processor that
incorporates
gamma ray
spectrometry
and utilizes a
small,
lightweight,
portable DT
neutron (14.1

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MeV) generator
(1×10^8 n/s),
proton recoil
scintillation
detectors, and
a gamma ray
detector
(HPGe). ORMAS
is based on
detecting
fission
neutrons and
gamma rays from

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inherent source
fission,
fission induced
by the external
DT source,
gamma ray
detection of
natural
emissions of
uranium and Pu,
and induced
gamma ray
emission by the

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interaction of
the 14.1 MeV
neutrons from
the DT source.
This system is
uniquely suited
for detection
of shielded
highly enriched
uranium (HEU),
plutonium and
other special
nuclear

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materials, and
detection of
high explosives
(HE), chemical
agents, and in
some cases,
drugs. It could
easily be
adjusted to
utilize a
trusted
processor that
incorporates

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information
barrier and
authentication
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using open
software and
then be useful
in some
international
applications
for materials
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may be
classified.

Since it is
based entirely
on commercially
available
components, the
entire system,
including the
NMIS data
acquisition
boards, can be
built with

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commercial off
the shelf

components
(COTS). ORMAS
incorporates
the PINS

technology of
A.J. Caffrey of
the Idaho

National
Engineering and
Environmental
Laboratory for

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HE, chemical agents, and drugs detection. The system hardware and software can be configured to obtain the following: Pu presence, Pu mass, Pu 240/239 ratio,

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Pu geometry, Pu metal vs. non metal (absence of metal), time (age) since processing for Pu, U presence, U mass, U enrichment, U geometry, U metal vs. non metal (absence of metal), high

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explosives,
chemical
weapons, and in
some cases,
drugs. A matrix
of the
quantities
determined, the
method of
determination,
whether active
(external
neutron source)

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or passive and the measurement equipment involved is given in the following table. Some of these attributes can be obtained by multiple data analysis methods. The

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gamma ray spectrometry methods for Pu, HE, and drugs are well known and have been developed by other laboratories. The system hardware and software may also be

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configured to estimate a selected subset of these attributes. In addition, signatures from ORMAS for fissile material can be used for template matching such

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as has been implemented for confirmation of inventories and receipts for weapons components at the Y-12 National Security Complex in Oak Ridge since 1996. Recently,

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Y-12 personnel were trained and have been operating three NMIS systems at the Y-12 complex. ORMAS has the advantage of combining multiple technologies into a single

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system for a
variety of
applications
and thus is
cost effective.
The State of
China's State
Capitalism
Detector Dogs
and Scent
Movement
Canines
Former Camp

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Elliott, San
Diego,

California

Current Methods
in Forensic
Gunshot Residue
Analysis

Applications of
Modern Mass
Spectrometry:
Volume 1

The
organization of

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an Advanced
Research

Workshop with
the title
"Detection and
Disposal of
Liquid
Explosives and
Flammable
Agents in
Connection with
Terrorism" was
motivated by

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This ARW
followed a
meeting about
the "Detection
of Disposal
Improvised
Explosives"
(St.

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Petersburg, 2005). Both items show the logistic problems as one of the lessons, terrorists have to overcome. These problems are connected with the illegal supply and transport

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of explosives
and fuels and
as counter-
measure the
detection of
these
materials. The
invention of
liquid
explosives goes
back to the
middle of the
19th century

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and was used
for special
purposes in the
commercial
field of
application.
Because of the
high
sensitivity of
liquid
explosives
against
mechanical

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shock, caused by adiabatic compression of air-bubbles producing "hot spots" as origin of initiation the commercial application was not very successful.

Because of this

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high risk,
liquid
explosives are
not used in
military or
commercial
application
with some
exceptions. In
the commercial
field
explosives as
slurries or

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emulsions consisting of suitable salts (Ammoniumnitrate etc.) and water are used to a large extent because of their high insensitivity. In many cases these slurries or emulsions

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were unfit for terrorist actions, because of their low sensitivity, large critical diameter and using in confinement. In the military field liquid explosives are

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used in World War I and II as bomb-fillings.

Despite the often difficult and time-consuming effort of performing experiments with fast (14 MeV) neutrons, these neutrons

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can offer
special insight
into nucleus
and other
materials
because of the
absence of
charge. 14 MeV

Neutrons:
Physics and
Applications
explores fast
neutrons in

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basic science
and
applications to
problems in
medicine, the
environment,
and security.

Drawing on his
more than 50
years of
experience
working with 14
MeV neutrons,

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the author focuses on:
Sources of 14 MeV neutrons, including laboratory size accelerators, small and sealed tube generators, well logging sealed tube accelerators,

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neutron
generators with
detection of
associated
alpha
particles,
plasma devices,
high flux
sources, and
laser-generated
neutron sources
Nuclear
reactions with

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14 MeV
neutrons,
including
measurements of
energy spectra,
angular
distributions,
and deductions
of reaction
mechanism
Nuclear
reactions with
three particles

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of effects of
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quasi-free
scattering, and
charge-
dependence of
nuclear forces

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Charged
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particularly po
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sensitive
detectors
Industrial
applications of
nuclear
analytical

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methods,
especially in
the metallurgy
and coal
industries

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quality control
measures for
nuclear
analytical
methods Nuclear
and atomic

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physics-based
technology for
combating
illicit

trafficking and
terrorism

Medical
applications,
including
radiography,
radiotherapy,
in vivo neutron
activation

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analysis, boron
neutron
therapy,
collimated
neutron beams,
and dosimetry
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reflects the
exciting
developments in
both
fundamental
nuclear physics

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application of
fast neutrons
to many
practical
problems. The
book shows how
14 MeV neutrons
are used in
materials
detection and
analysis to
effectively

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inspect large
volumes in
complex
environments.
This volume is
an initiative
undertaken by
the IEEE
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Force on
Security,

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Surveillance
and Defense to
consolidate and
disseminate the
role of CI
techniques in
the design,
development and
deployment of
security and
defense
solutions.

Applications

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range from the
detection of
buried
explosive
hazards in a
battlefield to
the control of
unmanned
underwater
vehicles, the
delivery of
superior video
analytics for

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protecting
critical
infrastructures
or the
development of
stronger
intrusion
detection
systems and the
design of
military
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networks.

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Defense
scientists,
industry
experts,
academicians
and
practitioners
alike will all
benefit from
the wide
spectrum of
successful
applications

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undergraduate
or graduate
students may
also discover
uncharted
territory for
their own
research
endeavors.

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the 4th
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1992,
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Military Dogs
Aspects of

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The Current
Situation and
Future
Direction for
Japanese
Research and
Development

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20-21 November,
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1996, Boston,
Massachusetts

This volume
details the
principles and
instrumentation
of gas chromatog
raphy-mass
spectrometry (CG-
MS), and
outlines
industrial,

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environmental,
pharmaceutical,

clinical,

toxicological,

forensic and

food-related

applications,

revealing

findings from

the laboratories

of 40

contributing

scientists

around the world

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using GC-MS in
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practice. It describes upstream and downstream applications of GC-MS in the petroleum industry and identifies chlorinated compounds in the environment with quadrupole ion-

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trap technology

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and high-

resolution

sector

instruments.

Detection and

quantification

of trace

chemicals is a

major thrust of

analytical

chemistry. In

recent years

much effort has

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been spent
developing
detection
systems for
priority
pollutants. Less
mature are the
detections of
substances of
interest to law
enforcement and
security
personnel: in
particular

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explosives. This volume will discuss the detection of these, not only setting out the theoretical fundamentals, but also emphasizing the remarkable developments in the last decade.

Terrorist

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events—airplanes
blown out of the
sky (PanAm 103
over Lockerbie)
and attacks on
U.S. and
European cities
(Trade Center in
New York and the
Murrah Federal
Building in
Oklahoma City,
railways in
London and Madri

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d) --emphasize
the danger of
concealed
explosives.

However, since
most explosives
release little
vapor, it was
not possible to
detect them by
technology used
on most organic
substances.

After PanAm 103

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was downed over
Scotland, the
U.S. Congress
requested
automatic
explosive
detection
equipment be
placed in
airports. This
volume outlines
the history of
explosive
detection

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research, the developments along the way, present day technologies, and what we think the future holds. - Written by experts in the field who set out both the scientific issues and the practical

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context with
authority -

Discusses and
describes the
threat -

Describes the
theoretical
background and
practical
applications of
both trace and
bulk explosives
detection

Now in its

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Forensic

second edition,
Investigation of
Explosions draws
on the editor's
30 years of
explosives
casework
experience,
including his
work on task
forces set up to
investigate
major explosives

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incidents. Dr.

Alexander Dt

Beveridge
provides a
broad, multidisc
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approach,
assembling the
contributions of
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recognized
experts who
present the
definitive

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reference work
on the subject.
Topics discussed
include: The
physics and
chemistry of
explosives and
explosions The
detection of
hidden
explosives The
effect of
explosions on
structures and

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sabotage

investigations

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scientists

Analysis of

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their residues

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pathology as it

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relates to
explosives
Presentation of
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With nearly 40
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new edition
contains revised
chapters and
several new
topics,
including: A
profile of

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management in
the UK Forensic
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Laboratory, one
of the world's
top labs, with a
discussion of
their management
system, training
procedures, and
practical
approaches to
problem solving

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Properties and
analysis of

improvised

explosives An

examination of

the Bali

bombings and the

use of mobile

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techniques and

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presentation of
evidence in

vehicle-borne
improvised

explosive device
cases, as

evidenced in
attacks on US

overseas targets
This volume

offers valuable
information to

all members of
prevention and

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post-blast
teams. Each
chapter was
written by an
expert or
experts in a
specific field
and provides
well-referenced
information
underlying best
practices that
can be used in
the field,

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laboratory,
conference room,
classroom, or
courtroom.

Basics,

Techniques and
Applications

Evidence of Its
Successes and
Pitfalls

Handbook of
Modern Sensors
Forensic

Investigation of

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Explosions
Toxicological

Profile for

Tetryl (2,4,6-trinitrophenyl-N-methylnitramine)

Chemistry- and

Biology-based

Technologies for
Contraband

Detection

**Clandestine lab
operators are**

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**not the mad
scientists whose
genius keeps
them pent up in
the laboratory
contemplating
elaborate
formulas and
mixing exotic
chemicals. In
fact, their
equipment is
usually simple,**

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**their chemicals
household**

**products, and
their education
basic. Most of
the time the
elements at the
scene are
perfectly legal
to sell and own.
It is only in the
combination of
all these**

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**elements that
the lab becomes
the scene of a
criminal
operation.**

**Forensic
Investigation of
Clandestine
Laboratories
guides you, step-
by-step,
through the
process of**

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**recognizing
these illegal
manufacturing
operations.**

**Then it shows
you how to
prove it in the
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language this
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**clandestine lab
How to process**

the site of a

clandestine lab

**How to analyze
evidence in the
examination**

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to derive from

the physical

evidence How

to present the

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**court The
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the
perpetrators, is
a team effort. A
collaboration of
law**

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**enforcement,
forensic**

experts,

scientists, and

criminal

prosecutors is

required to

present a case

that definitively

demonstrates

how a group of

items with

legitimate uses

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**are being used
to manufacture
an illegal
controlled
substance.**

**Providing an
understanding
of how the
pieces of the
clandestine lab
puzzle fit
together, this
book outlines**

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**the steps
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shut down these
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a multitude of
textbooks and
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**a researcher
and a**

**supervisor of
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either hard to
find, or too
scattered and
diverse. More
than once, I**

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**discovered that
what appeared
to be an
exciting new
idea was an old
concept that
was tried a few
decades earlier
during the
golden era of
“Atom for
Peace”. I am
hoping,**

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**therefore, that
this book will
serve as a
single
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source in a
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**concepts,
improving and
expanding
existing
techniques and
promoting the
development of
new ones.**

**14 MeV
Neutrons**