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Enforcement Applications

[Handbook of Machine Olfaction](#) Aug 09 2020 "Electronic noses" are instruments which mimic the sense of smell. Consisting of olfactory sensors and a suitable signal processing unit, they are able to detect and distinguish odors precisely and at low cost. This makes them very useful for a remarkable variety of applications in the food and pharmaceutical industry, in environmental control or clinical diagnostics and more. The scope covers biological and technical fundamentals and up-to-date research. Contributions by renowned international scientists as well as application-oriented news from successful "e-nose" manufacturers give a well-rounded account of the topic, and this coverage from R&D to applications makes this book a must-have read for e-nose researchers, designers and users alike.

Department of Homeland Security Appropriations for 2013 Nov 23 2021

[Computational Toxicology](#) Jul 08 2020

[Department of Homeland Security Appropriations for 2011, Part 3, March 24, 2010, 111-1 Hearings](#) Apr 16 2021

Electronic Noses & Sensors for the Detection of Explosives Sep 09 2020 This book examines both the potential application of electronic nose technology, and the current state of development of chemical sensors for the detection of vapours from explosives, such as those used in landmines. The two fields have developed, somewhat in parallel, over the past decade and so one of the purposes of this workshop, on which the book is based, was to bring together scientists from the two fields in order to challenge the two communities and, mutually, stimulate both fields. It begins with a review of the basic principles of an electronic nose and explores possible ways in which the detection limit of conventional electronic nose technology can be reduced to the level required for the trace levels observed for many explosive materials. Next are reviews of the use of several different types of solid-state chemical sensors: polymer-based sensors, i.e. chemiluminescent, fluorescent and optical, to detect explosive materials; metal oxide semiconducting resistive sensors; and then electrochemical sensors. Next, different pattern recognition techniques are presented to enhance the performance of chemical sensors. Then biological systems are considered as a possible blue-print for chemical sensing. The biology can be employed either to understand the way insects locate odorant sources, or to understand the signal processing neural pathways. Next is a discussion of some of the new types of electronic noses; namely, a fast GC column with a SAW detector and a micromechanical sensor. Finally, the important issues of sampling technologies and the design of the microfluidic systems are considered. In particular, the use of pre-concentrators and solid phase micro extractors to boost the vapour concentration before it is introduced to the chemical sensor or electronic nose.

Safety Oversight Manual Dec 01 2019

[Field Detection Technologies for Explosives](#) Oct 03 2022 [Field Detection Technologies For Explosives](#)

Explosives are historically the weapons that have been most frequently used against civilians by terrorist organisations. In the past few years, the use of explosives by terrorist groups has cost the lives of more people than the combination of all other attacks, including the use of weapons of mass destruction (chemical, biological and nuclear weapons). Early detection of these substances is one of the most effective ways to prevent attacks using explosives from occurring. Fast and reliable equipment to detect the presence of explosives and explosive devices is critical to fighting terrorism. Written in a style that makes complicated technologies easy to understand, this book covers the principles, instrumentation and applications of current technologies used to detect explosives in the field. Both trace detection technologies and bulk detection technologies are discussed. The section on trace detection technologies includes chapters on ion mobility spectrometry, piezoelectric sensors, chemiluminescence-based detectors, polymer-based technologies and mass spectrometry. It also discusses detection requirements, methodologies used for detector evaluation, and sampling technologies. The section on bulk detection contains chapters on x-ray, millimeter wave imaging, neutron and nuclear quadrupole resonance technologies. This volume introduces the basic concepts of commonly used explosives detection technologies and is an essential resource for novice or more experienced personnel working in the explosives detection field as well as those with a general interest in this important subject. Features Discusses all aspects of commonly used field detection technologies. Reviews detection requirements and explosives sampling methods. Describes specific instruments used for field detection applications, such as at airports, harbours and border crossings. Includes a summary of common explosives and their important properties for easy reference. Provides an introduction to data fusion and receiver operating characteristic methods, both of which have recently received significant attention in the field of explosives detection. Book jacket.

Portable Spectroscopy and Spectrometry, Applications Jun 30 2022 The most comprehensive resource available on the many applications of portable spectrometers, including material not found in any other published work [Portable Spectroscopy and Spectrometry: Volume Two](#) is an authoritative and up-to-date compendium of the diverse applications for portable spectrometers across numerous disciplines. Whereas [Volume One](#) focuses on the specific technologies of the portable spectrometers themselves, [Volume Two](#) explores the use of portable instruments in wide range of fields, including pharmaceutical development, clinical research, food analysis, forensic science, geology, astrobiology, cultural heritage and archaeology. [Volume Two](#) features contributions by a multidisciplinary team of experts with hands-on experience using portable instruments in their respective areas of expertise. Organized both by instrumentation type and by scientific or technical discipline, 21 detailed chapters cover various applications of portable ion mobility spectrometry (IMS), infrared and near-infrared (NIR) spectroscopy, Raman and x-ray fluorescence (XRF) spectroscopy, smartphone spectroscopy, and many others. Filling a significant gap in literature on the subject, the second volume of [Portable Spectroscopy and Spectrometry: Features](#) a significant amount of

content published for the first time, or not available in existing literature Brings together work by authors with assorted backgrounds and fields of study Discusses the central role of applications in portable instrument development Covers the algorithms, calibrations, and libraries that are of critical importance to successful applications of portable instruments Includes chapters on portable spectroscopy applications in areas such as the military, agriculture and feed, hazardous materials (HazMat), art conservation, and environmental science Portable Spectroscopy and Spectrometry: Volume Two is an indispensable resource for developers of portable instruments in universities, research institutes, instrument companies, civilian and government purchasers, trainers, operators of portable instruments, and educators and students in portable spectroscopy courses.

Moving Beyond the First Five Years Sep 21 2021

Aspects of Explosives Detection Aug 01 2022 Detection and quantification of trace chemicals is a major thrust of analytical chemistry. In recent years much effort has 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 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 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 Madrid)—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 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 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 context with authority - Discusses and describes the threat - Describes the theoretical background and practical applications of both trace and bulk explosives detection

Основы специальной техники органов внутренних дел (Общая часть) Jan 14 2021 В учебном пособии рассматриваются основы устройства, принципов действия, назначение и общий порядок применения и использования специальных технических средств общего назначения в деятельности органов внутренних дел. Характеризуются средства специальной техники, информация о которых не составляет служебную и государственную тайну.; Издание предназначено для слушателей курсов повышения квалификации и профессионального обучения сотрудников органов внутренних дел различных категорий, курсантов и слушателей образовательных организаций МВД России, для которых изучение и применение средств специальной техники не является профилирующим.

Chemistry and Technology of Explosives Sep 29 2019

Molecularly Imprinted Sensors Jun 06 2020 Molecular imprinting is a rapidly growing field with wide-ranging applications, especially in the area of sensor development, where the process leads to improved sensitivity, reliability, stability, and reproducibility in sensing materials. Molecularly Imprinted Sensors in Analytical Chemistry addresses the most recent advances and challenges relating to molecularly imprinted polymer sensors, and is the only book to compile this information in a single source. From fundamentals to applications, this material will be valuable to researchers working in sensing technologies for pharmaceutical separation and chemical analysis, environmental monitoring and protection, defense and security, and healthcare. Provides a systematic introduction to the different types of MIP-based sensors and reviews the basic principles behind each type of sensor Includes state-of-the-art methodology supported by comparisons and discussions from leading experts in the field Covers all types of sensing modes (optical, electrochemical, thermal, acoustic, etc.), materials and platforms Appeals to a multidisciplinary audience of scientists and graduate students in a wide variety of fields, including chemistry, biology, biomedical science and engineering, and materials science and engineering

BiTP 3/2015 Feb 12 2021 Kwartalnik naukowy "BiTP. Bezpieczeństwo i Technika Pożarnicza/ Safety & Fire Technique" jest pismem recenzowanym kierowanym do kadr kierowniczych ochrony przeciwpożarowej, pracowników jednostek administracji państwowej i samorządowej zajmujących się problematyką zarządzania kryzysowego, pracowników naukowych i dydaktycznych uczelni i instytutów badawczych

zainteresowanych tematyką ochrony przeciwpożarowej, ochrony ludności i bezpieczeństwa powszechnego. W ocenie czasopism Ministerstwa Nauki i Szkolnictwa Wyższego (Komunikat z dnia 18 grudnia 2015 r.) Kwartalnik otrzymał 13 punktów. ISSN 1895-8443 Więcej informacji na stronie Czytelnia.cnbop.pl Spis treści numeru: <http://czytelnia.cnbop.pl/czytelnia/42> Wydawnictwo CNBOP-PIB

Forensic Investigation of Clandestine Laboratories Feb 01 2020 Clandestine lab operators are 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, 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 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 recognizing these illegal manufacturing operations. Then it shows you how to prove it in the courtroom. In non-technical language this book details: How to recognize a clandestine lab How to process the site of a clandestine lab How to analyze evidence in the examination laboratory What to derive from the physical evidence How to present the evidence in court The identification and investigation of a clandestine lab, and the successful prosecution of the perpetrators, is a team effort. A collaboration of law enforcement, forensic experts, scientists, and criminal prosecutors is required to present a case that definitively demonstrates how a group of items with legitimate uses 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 the steps needed to identify and shut down these operations, as well as successfully prosecute the perpetrators.

Trace Chemical Sensing of Explosives May 18 2021 This timely book covers the most recent developments in the chemical detection of explosives in a variety of environments. Beginning with a broad view of the need for and the potential applications of chemical sensing, the book considers the issue of how to effectively include chemical sensing into systems designed to find hidden explosives devices. Offering a firsthand look at the latest technologies direct from those who are actively developing them, the book features: A look at the history of the field, including the contributions of recent programs A brief explanation of the chemistry of various explosives and differences in the place where they may be detected An introduction to the problems presented by trace element sensing An overview and comparison of the technologies currently being used and developed Case studies of field experiences with chemical sensors A look at the emerging threat of non-traditional explosives This book is an important reference for explosives engineers, systems engineers involved in the development of related devices, government agencies and NGOs involved in demining efforts, military and law enforcement specialists in mines and explosive ordinance disposal (EOD), as well as environmental scientists and chemists involved in explosives research. In addition to providing field workers with knowledge that will help them decide where and how to search for explosives using chemical sensors. It will provide them with an understanding of the potential and the limitations of chemical sensing in their search for and identification of dangerous devices.

Ion Mobility Spectrometry, Second Edition Apr 04 2020 Key Developments for Faster, More Precise Detection Capabilities Driven by the demand for the rapid and advanced detection of explosives, chemical and biological warfare agents, and narcotics, ion mobility spectrometry (IMS) undergone significant refinements in technology, computational capabilities, and understanding of the principles of gas phase ion chemistry and mobility. Beginning with a thorough discussion of the fundamental theories and physics of ion mobility, Ion Mobility Spectrometry, Second Edition describes the recent advances in instrumentation and newly pioneered applications. Divided into three sections, the first presents a history of technological developments, basic principles, theories, and other factors that govern the response in IMS. The second section describes aspects of IMS technology including sample introduction methods, draft tubes, modern methods for data analysis and display, the combination of mobility spectrometers with chromatographic methods, miniaturized IMS sensors, alternative ionization sources, and advances in computational capabilities that improved the acquisition and treatment of data. The final section emphasizes rapidly developing and exciting applications of IMS. The section is subdivided into existing, proven and potential applications encompassing the traditional forensic, military, and counter-terrorism applications and the now well-developed methods for detect biological agents and characterizing bio-molecules. It also

highlights other applications found in clinical and environmental venues and await further development. This new edition of Ion Mobility Spectrometry offers a lucid and complete analysis of the technological and contextual developments surrounding the chemistry, instrumentation and growing number of applications of IMS that incorporate and depend upon the latest innovations in the field.

Direct Analysis in Real Time Mass Spectrometry Nov 11 2020 Clear, comprehensive, and state of the art, the groundbreaking book on the emerging technology of direct analysis in real time mass spectrometry. Written by a noted expert in the field, Direct Analysis in Real Time Mass Spectrometry offers a review of the background and the most recent developments in DART-MS. Invented in 2005, DART-MS offers a wide range of applications for solving numerous analytical problems in various environments, including food science, forensics, and clinical analysis. The text presents an introduction to the history of the technology and includes information on the theoretical background, for example on the ionization mechanism. Chapters on sampling and coupling to different types of mass spectrometers are followed by a comprehensive discussion of a broad range of applications. Unlike most other ionization methods, DART does not require laborious sample preparation, as ionization takes place directly on the sample surface. This makes the technique especially attractive for applications in forensics and food science. Comprehensive in scope, this vital text: -Sets the standard on an important and emerging ionization technique -Thoroughly discusses all the relevant aspects from instrumentation to applications -Helps in solving numerous analytical problems in various applications, for example food science, forensics, environmental and clinical analysis -Covers mechanisms, coupling to mass spectrometers, and includes information on challenges and disadvantages of the technique Academics, analytical chemists, pharmaceutical chemists, clinical chemists, forensic scientists, and others will find this illuminating text a must-have resource for understanding the most recent developments in the field.

Counterterrorist Detection Techniques of Explosives Sep 02 2022 The detection of hidden explosives has become an issue of utmost importance in recent years. While terrorism is not new to the international community, recent terrorist attacks have raised the issue of detection of explosives and have generated a great demand for rapid, sensitive and reliable methods for detecting hidden explosives. Counterterrorist Detection Techniques of Explosives covers recent advances in this area of research including vapor and trace detection techniques (chemiluminescence, mass spectrometry, ion mobility spectrometry, electrochemical methods and micromechanical sensors, such as microcantilevers) and bulk detection techniques (neutron techniques, nuclear quadrupole resonance, x-ray diffraction imaging, millimeter-wave imaging, terahertz imaging and laser techniques). This book will be of interest to any scientists involved in the design and application of security screening technologies including new sensors and detecting devices which will prevent the smuggling of bombs and explosives. * Covers latest advances in vapor and trace detection techniques and bulk detection techniques * Reviews both current techniques and those in advanced stages of development * Techniques that are described in detail, including its principles of operation, as well as its applications in the detection of explosives

Modern Instrumental Analysis Mar 16 2021 Modern Instrumental Analysis covers the fundamentals of instrumentation and provides a thorough review of the applications of this technique in the laboratory. It will serve as an educational tool as well as a first reference book for the practicing instrumental analyst. The text covers five major sections: 1. Overview, Sampling, Evaluation of Physical Properties, and Thermal Analysis 2. Spectroscopic Methods 3. Chromatographic Methods 4. Electrophoretic and Electrochemical Methods 5. Combination Methods, Unique Detectors, and Problem Solving Each section has a group of chapters covering important aspects of the titled subject, and each chapter includes applications that illustrate the use of the methods. The chapters also include an appropriate set of review questions. * Covers the fundamentals of instrumentation as well as key applications * Each chapter includes review questions that reinforce concepts * Serves as a quick reference and comprehensive guidebook for practitioners and students alike

Portable Spectroscopy and Spectrometry, Technologies and Instrumentation Nov 04 2022 Provides complete and up-to-date coverage of the foundational principles, enabling technologies, and specific instruments of portable spectrometry Portable Spectroscopy and Spectrometry: Volume One is both a timely overview of the miniature technologies used in spectrometry, and an authoritative guide to the

specific instruments employed in a wide range of disciplines. This much-needed resource is the first comprehensive work to describe the enabling technologies of portable spectrometry, explain how various handheld and portable instruments work, discuss their potential limitations, and provide clear guidance on optimizing their utility and accuracy in the field. In-depth chapters—written by a team of international authors from a wide range of disciplinary backgrounds—have been carefully reviewed both by the editors and by third-party experts to ensure their quality and completeness. Volume One begins with general discussion of portable spectrometer engineering before moving through the electromagnetic spectrum to cover x-ray fluorescence (XRF), UV-visible, near-infrared, mid-infrared, and Raman spectroscopies. Subsequent chapters examine microplasmas, laser induced breakdown spectroscopy (LIBS), nuclear magnetic resonance (NMR) spectroscopy, and a variety of portable mass spectrometry instrument types. Featuring detailed chapters on DNA instrumentation and biological analyzers—topics of intense interest in light of the global coronavirus pandemic—this timely volume: Provides comprehensive coverage of the principles and instruments central to portable spectroscopy Includes contributions by experienced professionals working in instrument companies, universities, research institutes, the military, and hazardous material teams Discusses special topics such as smartphone spectroscopy, optical filter technology, stand-off detection, and MEMS/MOEMS technology Covers elemental spectroscopy, optical molecular spectroscopy, mass spectrometry, and molecular and imaging technologies Portable Spectroscopy and Spectrometry: Volume One is an indispensable resource for developers of portable instruments, civilian and government purchasers and operators, and teachers and students of portable spectroscopy. When combined with Volume Two, which focuses on the multitude of applications of portable instrumentation, Portable Spectroscopy and Spectrometry provides the most thorough coverage of the field currently available.

SFT 2/2019: Safety & Fire Technology Oct 23 2021 Safety & Fire Technology (do numeru 4/2018 "BiTP. Bezpieczeństwo i Technika Pożarnicza/ Safety & Fire Technique" ISSN 1895-8443) jest czasopismem recenzowanym, w którym publikowane są oryginalne artykuły naukowe, doniesienia wstępne, artykuły przeglądowe, studia przypadków. Zakres tematyczny czasopisma: teoria i modelowanie rozwoju pożaru metody i środki zapobiegania pożarom oraz ograniczania ich skutków dochodzenia popożarowe i analiza ryzyka pożaru taktyka, technika i bezpieczeństwo w działaniach ratowniczo-gaśniczych aspekty prawne i edukacja w ochronie przeciwpożarowej bezpieczeństwo i ochrona ludności zagrożenia i ochrona środowiska materiały w ochronie środowiska i zagrożeniach pożarowych nowoczesne technologie w ochronie przeciwpożarowej i ochronie środowiska

Chemistry of Energetic Materials May 06 2020 The study of energetic materials is emerging from one primarily directed toward practical interests to an advanced area of fundamental research, where state-of-the-art methods and theory are used side by side with modern synthetic methods. This timely book integrates the recent experimental, synthetic, and theoretical research of energetic materials. Editors George Olah and David Squire emphasize the importance of structure and mechanism in determining properties and performances. They also explore new spectrometric methods and synthetic approaches in this useful reference. Discusses structural analysis by x-ray crystallography Explains chemical dynamics by photofragmentation translational spectroscopy Covers kinetic analysis by ultrafast absorption and emission spectroscopy Details syntheses of polycyclic caged amines, fuel additives, and polynitro compounds Examines computer-aided design of monopropellants Includes contributions by two Nobel laureates and five members of the National Academy of Sciences

Air Transport Provision in Remoter Regions Oct 30 2019 This book stems from a series of biennial conferences devoted to issues affecting air-transport provision in remoter regions that have been organized by the Centre for Air Transport in Remoter Regions at Cranfield University. The primary aim of the conferences has been to provide an opportunity for those responsible for operating, managing, regulating and financing air transport services and associated infrastructure in these areas to be informed of the latest best-practice initiatives, to contrast different policy approaches and to debate potential solutions to perennial problems. Remoter regions has been a neglected area of air transport, as much of the focus of public and media attention is on the larger airlines, airports and aircraft. While the number of large airports in the world is in the hundreds, there are many thousands of smaller airports providing

communities all over the globe with vital air links. More often than not these services and the airports to which they are operated are loss making and require subsidies to sustain them. There are therefore many more interested parties involved in both providing and deciding issues relating to the provision of air transport in these situations, most especially central, regional and local governments who are charged with financing these activities. The book contains 17 chapters from experts in remote-region air transport, within the following 5 sections: - Key economic and socio-economic issues - Subvention mechanisms - Route development initiatives - Infrastructure provision - Issues affecting the provision of air services in remoter regions.

Counterterrorist Detection Techniques of Explosives Jul 20 2021 Counterterrorist Detection Techniques of Explosives, Second Edition covers the most current techniques available for explosive detection. This completely revised volume describes the most updated research findings that will be used in the next generation of explosives detection technologies. New editors Drs. Avi Cagan and Jimmie Oxley have assembled in one volume a series of detection technologies written by an expert group of 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 the correct instrumental screening technology according to the nature of the sample. Covers bulk/remote trace/contact or contact-less detection Describes techniques applicable to indoor (public transportation, human and freight) and outdoor (vehicle) detection Reviews both current techniques and those in advanced stages of development Provides detailed descriptions of every technique, including its principles of operation, as well as its applications in the detection of explosives

CP1115: Psychology 1B (PSY1022/PSY4122) Jan 02 2020

Mass Spectrometry Handbook Dec 25 2021 Due to its enormous sensitivity and ease of use, mass spectrometry has grown into the analytical tool of choice in most 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 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 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.

China's Security Jul 28 2019 "Chinese security has become a key focus after the Cold War, and this is reflected in the vast literature available and its study worldwide. This new 4 volume collection gathers together key research and articles, including a diverse range of contributions and approaches, covering debates on China's security strategy, security priorities in Asia, international security management and the making of Chinese security"--

Official Gazette of the United States Patent and Trademark Office Jun 18 2021

4th International Conference on Nanotechnologies and Biomedical Engineering Oct 11 2020 This book gathers the proceedings of the 4th International Conference on Nanotechnologies and Biomedical Engineering, held on September 18-21, 2019, in Chisinau, Republic of Moldova. It continues the tradition of the previous conference proceedings, thus reporting on both fundamental and applied research at the interface between nanotechnologies and biomedical engineering. Topics include: developments in bio-micro/nanotechnologies and devices; biomedical signal processing; biomedical imaging; biomaterials for biomedical applications; biomimetics; bioinformatics and e-health, and advances in a number of related areas. The book offers a timely snapshot of cutting-edge, multidisciplinary research and developments in the field of biomedical and nano-engineering.

Recommended Methods for the Identification and Analysis of Amphetamine, Methamphetamine and Their Ring-substituted Analogues in Seized Materials Aug 28 2019 The growth in the use of amphetamine-type stimulants (ATS) has become a significant global problem over the last 10-15 years, often involving new and unfamiliar ATS and trafficking trends which present a challenge to both national law enforcement authorities and to scientists in drug testing forensic laboratories. Given the need for more accurate methods for identification and analysis, this manual reflects the discussions and conclusions of a UNODC Consultative Meeting held in London in September 1998.

4th International Conference on Nanotechnologies and Biomedical Engineering Aug 21 2021 This book gathers the proceedings of the 4th International Conference on Nanotechnologies and Biomedical Engineering, held on September 18-21, 2019, in Chisinau, Republic of Moldova. It continues the tradition of the previous conference proceedings, thus reporting on both fundamental and applied research at the interface between nanotechnologies and biomedical engineering. Topics include: developments in bio-micro/nanotechnologies and devices; biomedical signal processing; biomedical imaging; biomaterials for biomedical applications; biomimetics; bioinformatics and e-health, and advances in a number of related areas. The book offers a timely snapshot of cutting-edge, multidisciplinary research and developments in the field of biomedical and nano-engineering.

Existing and Potential Standoff Explosives Detection Techniques Dec 13 2020 Existing and Potential Standoff Explosives Detection Techniques examines the scientific techniques currently used as the basis for explosives detection and determines whether other techniques might provide promising research avenues with possible pathways to new detection protocols. This report describe the characteristics of explosives, bombs, and their components that are or might be used to provide a signature for exploitation in detection technology; considers scientific techniques for exploiting these characteristics to detect explosives and explosive devices; discusses the potential for integrating such techniques into detection systems that would have sufficient sensitivity without an unacceptable false-positive rate; and proposes areas for research that might be expected to yield significant advances in practical explosives and bomb detection technology in the near, mid, and long term.

Guide for the Selection of Commercial Explosives Detection Systems for Law Enforcement Applications Jun 26 2019

Intelligent and Fuzzy Techniques in Aviation 4.0 Jan 26 2022 This book offers a comprehensive reference guide for the theory and practice of intelligent and fuzzy techniques in Aviation 4.0. It provides readers with the necessary intelligent and fuzzy tools for Aviation 4.0 when incomplete, vague, and imprecise information or insufficient data exist in hand, where classical modeling approaches cannot be applied. The respective chapters, written by prominent researchers, explain a wealth of both basic and advanced concepts including baggage services, catering services, check-in and boarding services, maintenance and cargo management, security, etc. To foster reader comprehension, all chapters include relevant numerical examples or case studies. Taken together, they form an excellent reference guide for researchers, lecturers, and postgraduate students pursuing research on Aviation 4.0. Moreover, by extending all the main aspects of Aviation 4.0 to its intelligent and fuzzy counterparts, the book presents a dynamic snapshot of the field that is expected to stimulate new directions, ideas, and developments.

Ion Mobility Spectrometry, Third Edition Mar 28 2022 Since the turn of the twenty-first century, applications of ion mobility spectrometry (IMS) have diversified, expanding their utility in the military and security spheres and entering the realms of clinical practice and pharmaceutical exploration. Updated and expanded, the third edition of Ion Mobility Spectrometry begins with a comprehensive discussion of the fundamental theory and practice of IMS. Divided into four sections—Overview, Technology, Fundamentals, and Applications—the authors treat innovations and advances in all aspects of IMS in a fresh, thorough, and revised format. Features: Introduces the definitions, theory, and practice of IMS and summarizes its history from the beginnings of the study of ions to present commercial and scholarly activities Presents the technology of IMS from a measurement perspective—covering inlet through ion formation, ion injection, electric fields, drift tube structures, and detectors Covers the end results of measurement, the mobility spectrum, and the transformative trend of ion mobility: mass spectrometry Discusses the influence on the experimental parameters on the mobility of ions Mobility-based methods are no longer restricted to volatile substances and indeed the many benefits of this technology—simplicity, convenience, and the low cost of technology—have become recognized as meritorious in a wide range of uses. This is also true for the advantages of measurements—high speed, distinctive spectral features, and operation in ambient pressure with thermalized ions. Ion Mobility Spectrometry, Third Edition serves specialists in the field of IMS who are interested in the potential of recent developments and researchers, engineers, and students who want a comprehensive overview of this technology.

Human Factors in Civil Aviation Security Operations Mar 04 2020

Signal Processing and Analysis Techniques for Nuclear Quadrupole Resonance Spectroscopy Feb 24 2022

This book is about improving prohibited substances detection using the nuclear quadrupole resonance (NQR) technique at security checkpoints. The book proposes multiple signal processing and analysis techniques for improving detection of dangerous or contraband substances, such as explosives, narcotics, or toxic substances. Also, several hardware solutions are described and implemented in a custom-designed NQR spectrometer. A new approach to NQR signal detection is introduced using artificial intelligence/deep learning techniques. The book will be useful for researchers and practitioners in the areas of electrical engineering, signal processing and analysis, applied spectroscopy, as well as for security or laboratory equipment manufacturers.

Applications May 30 2022 Nanospectroscopy addresses the spectroscopy of very small objects down to

single molecules or atoms, or high-resolution spectroscopy performed on regions much smaller than the wavelength of light, revealing their local optical, electronic and chemical properties. This work highlights modern examples where optical nanospectroscopy is exploited in modern photonics, optical sensing, the life sciences, medicine, or state-of-the-art applications in material, chemical and biological sciences. Two-volume graduate textbook "Optical Nanospectroscopy" by the editors: Vol. 1: Fundamentals & Methods. Vol. 2: Instrumentation, Simulation & Materials.

Interpol's Forensic Science Review Apr 28 2022 Every three years, worldwide forensics experts gather at the Interpol Forensic Science Symposium to exchange ideas and discuss scientific advances in the field of forensic science and criminal justice. Drawn from contributions made at the latest gathering in Lyon, France, Interpol's Forensic Science Review is a one-source reference providing a comp