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# Ndt Radiographic Testing

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Introduction to the Non-Destructive Testing of Welded Joints

Radiographic Testing

Industrial Radiography and Non-destructive Testing

Improving the Effectiveness and Reliability of Non-destructive Testing

Nondestructive Testing Standards--present and Future

Radiation Source Use and Replacement

Non-Destructive Testing

Handbook of Nondestructive Evaluation, 3E

Radiation Protection and Safety in Industrial Radiography

Aeronautical Applications of Non-destructive Testing

X-rays, Gamma-rays

Handbook of Nondestructive Evaluation, 3E

Non-Destructive Evaluation of Corrosion and Corrosion-assisted Cracking

Principles and Applications of Liquid Penetrant Testing

Training Guidelines in Non-destructive Testing Techniques

NON DESTRUCTIVE TESTING

Nondestructive Testing Methods for Steel Bridges  
Level III Study Guide

Ultrasonic Flaw Detection  
ASNT Level III Study Guide  
NONDESTRUCTIVE TESTING (NDT)  
Handbook of Nondestructive Evaluation, Second  
Edition  
Practical Non-destructive Testing  
Gamma Radiation Safety Study Guide  
ASNT Level II Study Guide  
Industrial Radiology  
Robotic Nondestructive Testing Technology  
Electron Radiography  
Liquid Penetrant Testing  
Trends in Optical Non-Destructive Testing and  
Inspection  
NDT Ultrasonic Testing Questions with Answers  
Nondestructive Testing Standards  
Manuals Combined: Nondestructive Testing (NDT)  
And Inspection (NDI)  
Industrial Radiology  
Introduction to Nondestructive Testing  
Materials and Processes for NDT Technology  
Radiography in Modern Industry  
Nondestructive Testing of Materials and  
Structures  
Introduction to the Non-Destructive Testing of  
Welded Joints  
Introduction to Nondestructive Testing

Ndt  
Radiographic control system government organization public use  
Testing by guest

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Introduction to  
the Non-

Destructive  
Testing of  
Welded Joints  
Amer Society

for  
Nondestructiv  
e  
A complete,  
up-to-date  
guide to the  
leading  
product  
testing  
standard Fully  
revised to  
cover the  
latest  
nondestructiv  
e testing  
(NDT)  
procedures,  
this practical  
resource  
reviews  
established  
and emerging  
methods for  
examining  
materials  
without  
destroying  
them or  
altering their  
structure.  
Handbook of  
Nondestructiv

e Evaluation,  
Second  
Edition offers  
in-depth  
details on the  
background,  
benefits,  
limitations,  
and  
applications of  
each method.  
The book  
provides  
advice on how  
to interpret  
results and  
formulate  
accurate  
decisions  
based on your  
findings. New  
chapters on  
digital  
radiography,  
ultrasonic  
phased array  
testing, and  
ultrasonic  
guided wave  
inspection are  
included. This  
is a must-have

reference for  
NDT  
certification  
candidates,  
engineers,  
metallurgists,  
quality control  
specialists,  
and anyone  
involved in  
product  
design,  
manufacture,  
or  
maintenance.  
Handbook of  
Nondestructiv  
e Evaluation,  
Second  
Edition covers:  
Introduction to  
nondestructiv  
e testing  
Discontinuities  
—origins and  
classification  
Visual testing  
Penetrant  
testing  
Magnetic  
particle  
testing

Radiographic testing	II, and III certification-in	the book is
Ultrasonic testing	accordance with the	meant to supplement
Eddy current testing	American Society for	the required hands-on
Thermal infrared testing	Nondestructive Testing	laboratory and field training.
Acoustic emission testing	(ASNT) Recommended Practice No.	College and university
Digital radiography	SNT-TC-1A (August 1984	instructors should find
Ultrasonic phased array testing	edition). Contents follow the	the text especially useful in
Ultrasonic guided wave inspection	general outline of SNT-TC-1A.	working with private
<u>Radiographic Testing</u>	Includes typical chapter	industry and NDT employers.
American Society for Nondestructive	questions and answers, as	Coverage is broad in
Testing	well as information on	scope, making this guide a
Society for Nondestructive	recent state-of-the-art	useful general reference.
Testing	developments. In the case of	Topics covered include the
American Society for Nondestructive	Level III certification,	theory and techniques of
Testing		radiographic equipment,

magnetic particle tests, ultrasonic testing, liquid penetrant tests, electromagnetic testing method, neutron radiographic testing, leak testing methods, acoustic emissions, visual inspection and holography.

**Industrial Radiography and Non-destructive Testing**

Pergamon Condition assessment and characterization of materials and structures by

means of nondestructive testing (NDT) methods is a priority need around the world to meet the challenges associated with the durability, maintenance, retrofitting, renewal and health monitoring of new and existing infrastructures including historic monuments. Numerous NDT methods that make use of certain components of the electromagnetic and

acoustic spectrum are currently in use to this effect with various levels of success and there is an intensive worldwide research effort aimed at improving the existing methods and developing new ones. The knowledge and information compiled in this book captures the current state of the art in NDT methods and their application to civil and other engineering materials and structures.

<p>Critical reviews and advanced interdisciplinary discussions by world-renowned researchers point to the capabilities and limitations of the currently used NDT methods and shed light on current and future research directions to overcome the challenges in their development and practical use. In this respect, the contents of this book will equally benefit practicing engineers and</p>	<p>researchers who take part in characterization, assessment and health monitoring of materials and structures. <i>Improving the Effectiveness and Reliability of Non-destructive Testing</i> DEStech Publications, Inc Over 8,300 pages .... Just a SAMPLE of the CONTENTS: NONDESTRUCTIVE INSPECTION METHODS. Published by the Departments of the Army,</p>	<p>Navy and Air Force on 1 March 2000 - 771 pages and June 2005 - 762 pages; <i>Metallic Materials and Elements for Aerospace Vehicle Structures</i> 1,733 pages <i>Designing and Developing Maintainable Products and Systems - Revision A</i> 719 pages <i>Sampling Procedures and Tables for Inspection by Attributes</i> 75 pages <i>Nondestructive Testing Acceptance Criteria</i> 88 pages <i>Environmental</i></p>
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Stress Screening Process for Electronic Equipment 49 pages	Handbook for Reliability Test Methods, Plans, and Environments for Engineering, Development, Qualification, and Production - Revision A 411 pages	Human Engineering - Revision F 219 pages	Sampling Procedures and Tables for Life and Reliability Testing (Based on Exponential Distribution)	77 pages	Test Method Standard: Electronic and Electrical Component Parts 191 pages	Reliability Program for Systems and Equipment Development and Production - Revision B 88 pages
				Reliability Testing for Engineering Development, Qualification and Production - Revision D 47 pages	Electroexplosive Subsystem Safety Requirements and Test Methods for Space Systems (150 pages, 8.64 MB) Reliability Prediction of Electronic Equipment- Notice F 205 pages	Reliability Program for Systems and Equipment Development and Production - Revision B 88 pages
						Electronic Discharge Control Handbook for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices) - Revision B 171 pages
						Electrical Grounding for Aircraft Safety 290 pages
						Fuze and Fuze

Components, Environmental and Performance Tests for - Revision C 295 pages	pages Definition of Terms for Reliability and Maintainability - Revision C 18 pages	Engineering Guidelines 416 pages)
Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment - Revision E 253 pages	Semiconductor Devices 730 pages	Test Methods for Electrical Connectors - Revision A 129 pages
Maintainability Verification/Demonstration/Evaluation - Revision A 64 pages	Reliability Modeling and Prediction - Revision B 85 pages	Environmental Engineering Considerations and Laboratory Tests - Revision F 539 pages
Failure Rate Sampling Plans and Procedures - Revision C 41 pages	Established Reliability and High Reliability Qualified Products List (QPL) Systems For Electrical, Electronic, and Fiber Optic Parts Specifications - Revision F 17 pages	System Safety Program Requirements 117 pages
Maintainability Prediction 176	Environmental Test Methods and	Test Method Standard Microcircuits - Revision E 705 pages
		Test Method Standard Microcircuits - Revision F 708 pages
		Procedures for Performing a



<p>Failure Mode Effects and Criticality Analysis - Revision A 54 pages</p> <p><b>Nondestructi ve Testing Standards-- present and Future</b></p> <p>McGraw Hill Professional</p> <p>The handbook outlines the principles, equipment, materials maintenance, methodology, and interpretation skills necessary for liquid penetration testing. The third edition adds new sections on filtered particle</p>	<p>testing of aerospace composites, quality control of down hole oil field tubular assemblies, and probability of detection, and considers new regulations on CFC fluids throughout the text.</p> <p>Annotation copyrighted by Book News, Inc., Portland, OR</p> <p><i>Radiation Source Use and Replacement</i></p> <p>CRC Press</p> <p>Industrial radiography is a well-established non-destructive</p>	<p>testing (NDT) method in which the basic principles were established many years ago. However, during 1993-95 the European Standards Organisa tion (CEN) commenced drafting many new standards on NDT including radiographic methods, and when completed these will replace national standards in all the EC member countries. In some cases</p>
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these standards vary significantly from those in use in the UK at present. These CEN standards are accepted by majority, not unanimous voting, so they will become mandatory even in countries which vote against them. As most are likely to be legal by the time this second edition is published, they are described in the appropriate places in the text. The most

important new technical development is the greater use of computers in radiology. In the first edition, computerized tomography was only briefly mentioned at the end of Chapter 11, as it was then largely a medical method with only a few equipments having found a place in industrial use. The method depends on a complex computer program and a large data store.

Industrial equipments are now being built, although their spread into industry has been slow. Computer data storage is also being used for radiographic data. Small computers can now store all the data produced by scanning a radiographic film with a small light-spot, and various programs can be applied to these data. Non-Destructive Testing Elsevier  
The content of

this book includes a variety of nondestructive testing (NDT) methods, with many introductions to testing and application cases. The book proposes new ultrasonic testing technology for complex workpieces. It is hard for traditional NDT technology to realize the automatic detection of complex curved components, especially the automatic high-precision nondestructive

detection of curved-surface components with variable curvature, variable thickness and complex contour. Therefore, the robotic NDT technique as a combination of manipulator technique and NDT technique can further improve the efficiency and accuracy of NDT. Robotic NDT Technique combines the physical principle of nondestructive testing with the flexible motion control of spatial

attitude of articulated manipulator. With NDT as the constraint, it controls the motion attitude and azimuth angle of a transmitting and receiving transducer. Thus traditional NDT technique has developed from plane to curved surface, from 2D to many dimensions and from artificiality to intelligence, into a unique and systematic interdisciplinary robotic NDT technique. Handbook of

Nondestructive Evaluation, 3E McGraw-Hill Education Master the fundamentals of NDT ultrasonic testing with this comprehensive e-book. Packed with hundreds of questions and detailed answers, this guide is perfect for both experienced technicians looking to refresh their knowledge and beginners just starting out. With in-depth explanations and real-world examples, this

e-book is the ultimate study tool for passing your certification exam with ease. Available for immediate download, you can start studying right away and achieve success in your NDT ultrasonic testing career. **Radiation Protection and Safety in Industrial Radiography** Elsevier This second edition builds on the success of the first and covers the widespread introduction of computer

technology, particularly the digitisation of data into the many branches of NDT. It surveys the new European (CEN) Standards and provisional CEN Standards on NDT, many of which are replacing British Standards. New NDT techniques not included in the first edition are also included. **Aeronautical Applications of Non-destructive Testing** Chetan Singh

Industrial radiography is a well-established non-destructive testing (NDT) method in which the basic principles were established many years ago. However, during 1993-95 the European Standards Organisation (CEN) commenced drafting many new standards on NDT including radiographic methods, and when completed these will replace national standards in all the EC member countries. In some cases these standards vary significantly from those in use in the UK at present. These CEN standards are accepted by majority, not unanimous voting, so they will become mandatory even in countries which vote against them. As most are likely to be legal by the time this second edition is published, they are described in the appropriate places in the text. The most important new technical development is the greater use of computers in radiology. In the first edition, computerized tomography was only briefly mentioned at the end of Chapter 11, as it was then largely a medical method with only a few equipments having found a place in industrial use. The method

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Computer data storage is also being used for radiographic data. Small computers can now store all the data produced by scanning a radiographic film with a small light-spot, and various programs can be applied to

these data. *X-rays*, *Gamma-rays* Amer Society for Nondestructive testing (NDT) is the process of inspecting, testing, or evaluating materials, components or assemblies for discontinuities, or differences in characteristics without destroying the serviceability of the part or system. In other words, when the inspection or test is completed the

part can still be used. In contrast to NDT, other tests are destructive in nature and are therefore done on a limited number of samples ("lot sampling"), rather than on the materials, components or assemblies actually being put into service. These destructive tests are often used to determine the physical properties of materials such as impact resistance, ductility, yield and ultimate tensile

<p>strength, fracture toughness and fatigue strength, but discontinuities and differences in material characteristics are more effectively found by NDT. Today modern nondestructive tests are used in manufacturing , fabrication and in-service inspections to ensure product integrity and reliability, to control manufacturing processes, lower production costs and to maintain a</p>	<p>uniform quality level. During construction, NDT is used to ensure the quality of materials and joining processes during the fabrication and erection phases, and in-service NDT inspections are used to ensure that the products in use continue to have the integrity necessary to ensure their usefulness and the safety of the public. It should be noted that while the medical field</p>	<p>uses many of the same processes, the term "nondestructive testing" is generally not used to describe medical applications. Test method names often refer to the type of penetrating medium or the equipment used to perform that test. Current NDT methods are: Acoustic Emission Testing (AE), Electromagnetic Testing (ET), Laser Testing Methods (LM), Leak Testing (LT), Magnetic</p>
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<p>Flux Leakage (MFL), Liquid Penetrant Testing (PT), Magnetic Particle Testing (MT), Neutron Radiographic Testing (NR), Radiographic Testing (RT), Thermal/Infrared Testing (IR), Ultrasonic Testing (UT), Vibration Analysis (VA) and Visual Testing (VT). The six most frequently used test methods are MT, PT, RT, UT, ET and VT. Each of these test methods will be described here, followed by the other,</p>	<p>less often used test methods. <u>Handbook of Nondestructive Evaluation</u>, 3E Elsevier Science Limited This is the fourth volume in a new edition of a handbook for college seniors and above that combines essential information on traditional penetrating radiation non-destructive testing techniques as well as incoming digital technologies. The 22 chapters</p>	<p>include much new material, particularly in the area of digital imaging, data processing, digital image reconstruction, backscatter imaging and computed tomography. Topics include radiation and particle physics, electronic and isotope radiation sources, radioscopy, digital radiographic imaging, applications, image data analysis, radiation measurement and safety, attenuation</p>
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coefficients, radiographic testing of metal castings and welds, neutron radiography, and radiographic filming, interpretation, and film development. Contains an extensive glossary and many b&w illustrations and charts. Annotation copyrighted by Book News, Inc., Portland, OR  
*Non-Destructive Evaluation of Corrosion and Corrosion-assisted Cracking*  
 Woodhead

Publishing  
 A comprehensive text to the non-destructive evaluation of degradation of materials due to environment that takes an interdisciplinary approach  
 Non-Destructive Evaluation of Corrosion and Corrosion-assisted Cracking is an important resource that covers the critical interdisciplinary topic of non-destructive evaluation of degradation of materials due to

environment.  
 The authors—note d experts in the field—offer an overview of the wide-variety of approaches to non-destructive evaluation and various types of corrosion. The text is filled with instructive case studies from a range of industries including aerospace, energy, defense, and processing. The authors review the most common non-destructive evaluation

techniques that are applied in both research and industry in order to evaluate the properties and more importantly degradation of materials components or systems without causing damage. Ultrasonic, radiographic, thermographic, electromagnetic, and optical are some of the methods explored in the book. This important text: Offers a groundbreaking interdisciplinary

approach to non-destructive evaluation of corrosion and corrosion-assisted cracking. Discusses techniques for non-destructive evaluation and various types of corrosion. Includes information on the application of a variety of techniques as well as specific case studies. Contains information targeting industries such as aerospace, energy,

processing. Presents information from leading researchers and technologists in both non-destructive evaluation and corrosion. Written for life assessment and maintenance personnel involved in quality control, failure analysis, and R&D. Non-Destructive Evaluation of Corrosion and Corrosion-assisted Cracking is an essential interdisciplinary guide to the topic.

### **Principles**

**and Applications of Liquid Penetrant Testing** Amer Society for Nondestructive  
 This second edition builds on the success of the first and covers the widespread introduction of computer technology, particularly the digitisation of data into the many branches of NDT. It surveys the new European (CEN) Standards and provisional CEN Standards on NDT, many of

which are replacing British Standards. New NDT techniques not included in the first edition are also included. Training Guidelines in Non-destructive Testing Techniques NestFame Creations Pvt Ltd. This study guide is intended to aid individuals preparing to take the ASNT NDT Level III examination for radiographic testing. This edition builds on the Level III

Study Guide: Radiographic Testing Method written by Tim Kinsella.

**NON DESTRUCTIVE TESTING**

CRC Press  
 This comprehensive book covers the five major NDT methods - liquid penetrants, eddy currents, magnetic particles, radiography and ultrasonics in detail and also considers newer methods such as acoustic emission and thermography and discusses their role in

on-line monitoring of plant components. Analytical techniques such as reliability studies and statistical quality control are considered in terms of their ability to reduce inspection costs and limit down time. A useful chapter provides practical guidance on selecting the right method for a given situation. *Nondestructive Testing Methods for Steel Bridges* National

Academies Press This updated Second Edition covers current state-of-the-art technology and instrumentation The Second Edition of this well-respected publication provides updated coverage of basic nondestructive testing (NDT) principles for currently recognized NDT methods. The book provides information to help students and NDT personnel qualify for Levels I, II,

and III certification in the NDT methods of their choice. It is organized in accordance with the American Society for Nondestructive Testing (ASNT) Recommended Practice No. SNT-TC-1A (2001 Edition). Following the author's logical organization and clear presentation, readers learn both the basic principles and applications for the latest techniques as they apply to a wide range

of disciplines that employ NDT, including space shuttle engineering, digital technology, and process control systems. All chapters have been updated and expanded to reflect the development of more advanced NDT instruments and systems with improved monitors, sensors, and software analysis for instant viewing and real-time imaging. Keeping pace with the latest developments and

innovations in the field, five new chapters have been added: \* Vibration Analysis \* Laser Testing Methods \* Thermal/Infrared Testing \* Holography and Shearography \* Overview of Recommended Practice No. SNT-TC-1A, 2001 Each chapter covers recommended practice topics such as basic principles or theory of operation, method advantages and disadvantages, instrument

description and use, brief operating and calibrating procedures, and typical examples of flaw detection and interpretation, where applicable. *Level III Study Guide* Woodhead Publishing This book covers a wide range of measurement techniques broadly referred to as Optical Metrology, with emphasis on their applications to nondestructive testing. If we look separately at each of the

two terms making the generic name Optical Metrology, we find a link to two of the most distinctive aspects of humans: a particularly well developed sense of vision and a desire to classify things using numbers and rules. Of all our five senses, vision is certainly the most developed and the closest to the rational part of our brain. It can be argued that our memory is

strongly dependent on images and the brain is particularly good at processing the stimuli received from these images to extract information. Measuring, sizing and counting are, on the other hand, among the fundamental building blocks of modern society. The use of abstract quantities like size, value or intensity has simplified the description of complex enquiry and is

the basis of modern science and economy. Hence, it would seem natural that the combination of two such basic aspects should result in the birth of a new field of science. However, it is known that this has not been the case. Optical Metrology remains classified as a group of special techniques used mainly in niche applications. Optical Metrology may be rightly

described as an ensemble of techniques in which fields such as physics, electrical and mechanical engineering, and computer science merge and blend in new ways. This book is intended as a tribute to the career of Professor Léopold Pflug. By looking back at his lifelong commitment to the application of optical metrology to the service of engineering sciences, more particularly

devoted to the observation of the real behavior of structural components, one can retrace the major revolutions that have taken place in this domain. Starting his activity in 1971 as the head of the Laboratory for Stress Analysis at the EPFL in Switzerland, he first employed photoelasticity as a tool to improve the understanding of the real behavior of complex structures.

However he soon recognized the necessity of working with the real materials used to build these structures instead of on replicas made of optically birefringent materials. He then focussed on the use of moiré techniques which sparked his fascination with laser-based holography and speckle-based methods. The advent of information technology led him to open up to the use of ESPI and

digital image processing techniques. Finally, in the mid 1990s he became interested in the use of optical fibers as a tool for sensing deformations inside structures, not only on their surfaces as in the case of whole-field methods. It is interesting to note the parallel in the evolution of optical metrology vis à vis developments in other fields: the development of lasers led to holographic

interferometry, the availability of frame-grabbers led to ESPI and the emergence of fiber optic communications opened the way to the development of fiber optic sensors. This puts in sharp perspective the strong dependence of optical metrology on the latest technology for its development. Also interesting to note is that all fields in optical metrology touched upon

by Professor Pflug are still of great relevance, as shown by the contributions in this volume. This book is, however, not intended as a commemoration, rather as an occasion to review the trends and undercurrents that are driving the field of optical metrology, with emphasis on nondestructive testing. All the authors were asked to summarize the recent achievements in their respective fields and to



speculate about the future. As a result it has become apparent that it is difficult although not impossible to spot general trends in these disparate fields. Optical metrology has considerably benefited from some of the most important innovations of the recent past: lasers, computers and fiber optics communication, all of which found their direct inspiration from the

developments in the world of electronics. In recent years we have also witnessed a shift of power from states to corporations. This has created the need to produce quick results useful to industry. Optical nondestructive testing has certainly adapted to this evolution, and several contributions in this book show that the researchers in this field understand the importance of developing technology

that can be used by the industry to solve specific problems. We should also not forget that optical nondestructive testing is essentially a "service technology" and should as such not only focus on serving its clients in the best possible way, but also should continually emphasize, extend and enhance its services to new users still unaware of its potential. Hopefully this book will help in spreading

awareness of the potentials of optical metrology and in focusing on the challenges of the future.

**Ultrasonic  
Flaw  
Detection**

Springer  
Science &  
Business  
Media  
Comprehensive  
e guide to the  
basic  
principles and  
applications of  
non-  
destructive  
testing  
methods for  
aircraft  
system and  
components:  
airframe,  
propulsion,  
landing gear  
and more  
Provides  
detailed

analysis of the  
advantages  
and  
disadvantages  
of major NDT  
methods  
Important for  
design,  
inspection,  
maintenance,  
repair,  
corrosion  
protection and  
safety This  
critical book is  
among the  
first to provide  
a detailed  
assessment of  
non-  
destructive  
testing  
methods for  
the many  
materials and  
thousands of  
parts in  
aircraft. It  
describes a  
wide variety of  
NDT  
techniques

and explains  
their  
application in  
the evaluation  
and inspection  
of aerospace  
materials and  
components  
ranging from  
the entire  
airframe to  
systems and  
subsystems.  
At the same  
time the book  
offers  
guidance on  
the  
information  
derived from  
each NDT  
method and  
its relation to  
aircraft  
design, repair,  
maintenance  
and overall  
safety. The  
book covers  
basic  
principles, as  
well as

practical details of instrumentation, procedures and operational results with a full discussion of each method's capabilities and limitations as these pertain to aircraft inspection and different types of materials, e.g., composites and metal alloys. Technologies covered include: optical and enhanced optical methods; liquid penetrant, replication

and magnetic particle inspection; electromagnetic and eddy current approaches; acoustics and ultrasonic techniques; infrared thermal imaging; and radiographic methods. A final section is devoted to NDT reliability and ways the probability of detection can be measured to establish inspection intervals. *ASNT Level III Study Guide* Jeffrey Frank Jones Non-Destructive Testing (NDT)

is an activity closely related to the quality and reliability of products, and to the reliable and safe operation of industrial plants. Physical measuring techniques are used to examine parts of constructional assemblies for hidden imperfections and defects. A wide choice of measuring techniques is available to meet the demand of examining a wide variety of materials such as metals, plastics, rocks,

as well as different structures and sizes ranging from semiconductor chips to nuclear reactors and off-shore oil platforms. Activities in the field of NDT encompass: Fundamental research to understand and describe the way in which reactions of certain imperfections to a physical measuring technique can be optimized and used to assess type and grade of imperfection;

Methods to characterize materials and materials properties; Applications in product quality control; Applications in plant inspection to ensure a reliable operation of components, avoiding damage to both man and environment, as well as financial losses; Personnel education and qualification schemes; The spread of NDT applications to newly industrialized countries. The

two proceedings volumes contain over 400 review and specialist papers. The most recent developments in the field of NDT are presented with contributions by outstanding experts from all over the world. Papers are grouped according to technique for those dealing with fundamental research and to field of application for the more practical oriented ones. In this way

each chapter provides an easy overview of related current research. Extensive keyword indexes have been included to facilitate

the retrieval of information according to individual requirements. The high technical level of the papers and their up-to-date

content will make them an indispensable source of information for students, researchers and professionals in the areas covered.