

The background of the top half of the page is a vibrant, abstract digital illustration. It features a central globe with a grid of latitude and longitude lines. Overlaid on the globe and the entire background are numerous glowing blue and white lines, some straight and some curved, resembling circuit traces or data paths. There are also many small, bright white and blue dots scattered throughout, giving the impression of data points or stars in a digital space. The overall color palette is dominated by deep blues, bright whites, and hints of purple and green.

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# **TECHNOLOGY & ENGINEERING**

**2023-2024 CATALOGUE**

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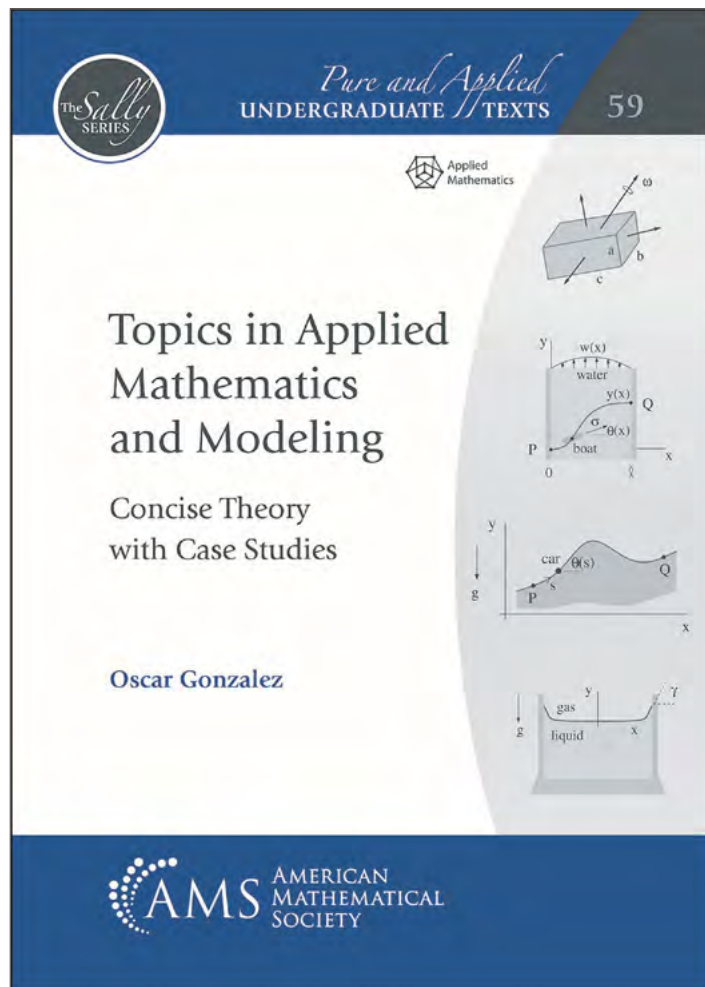


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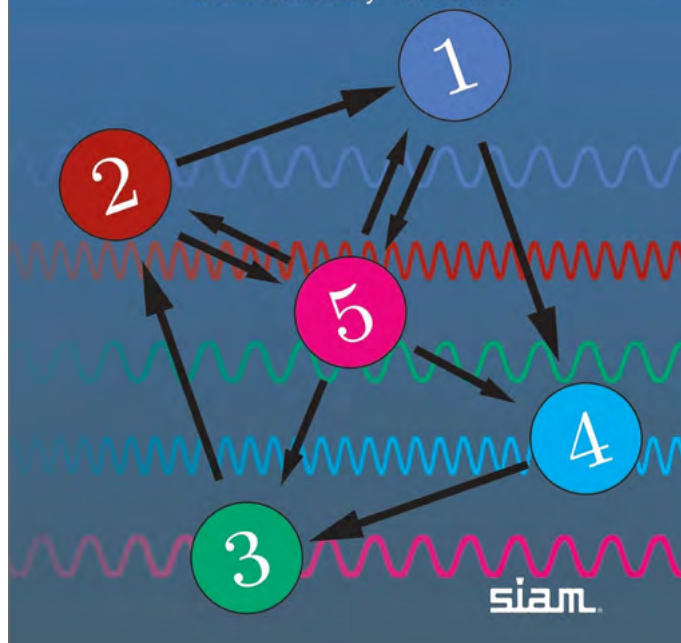
**American Mathematical Society**



# Dynamics and Bifurcation in Networks

Theory and Applications of Coupled  
Differential Equations

Martin Golubitsky • Ian Stewart



## DYNAMICS AND BIFURCATION IN NETWORKS

### Theory and Applications of Coupled Differential Equations

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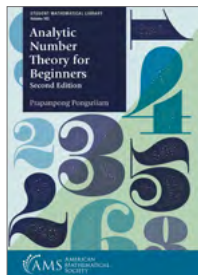
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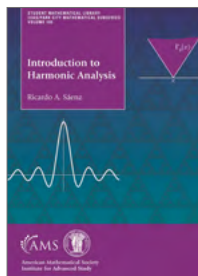
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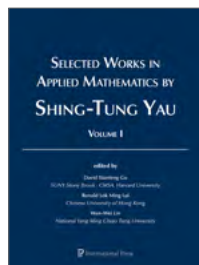
Introduces symbolic dynamics from a perspective of topological dynamical systems. After introducing symbolic and topological dynamics, the core of the book consists of discussions of subshifts of positive entropy, of zero entropy, other non-shift minimal action on the Cantor set, and the ergodic properties of these systems.

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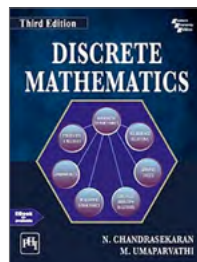
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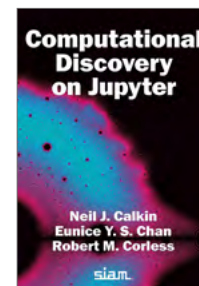
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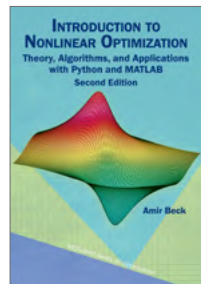
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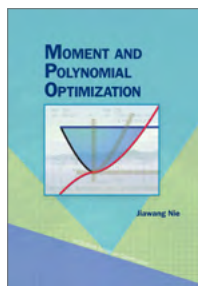
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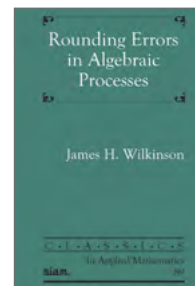
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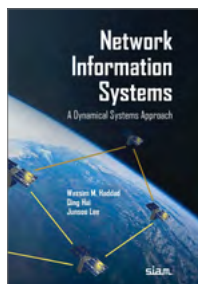
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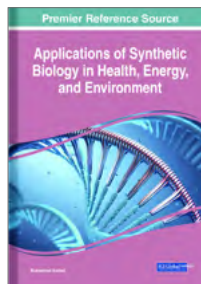
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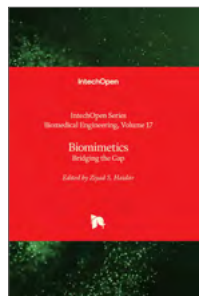
A comprehensive exploration of the revolutionary impact of

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*Edited by Yuan-Chuan Chen*

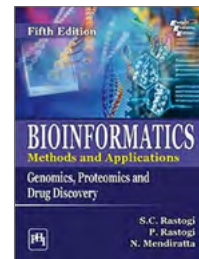
CRISPR technology has been extensively used in vitro and in vivo as a tool in basic research for genetic editing (e.g., genome encoding, silencing, enhancing, and modification). This book provides a comprehensive overview of CRISPR technology. It examines

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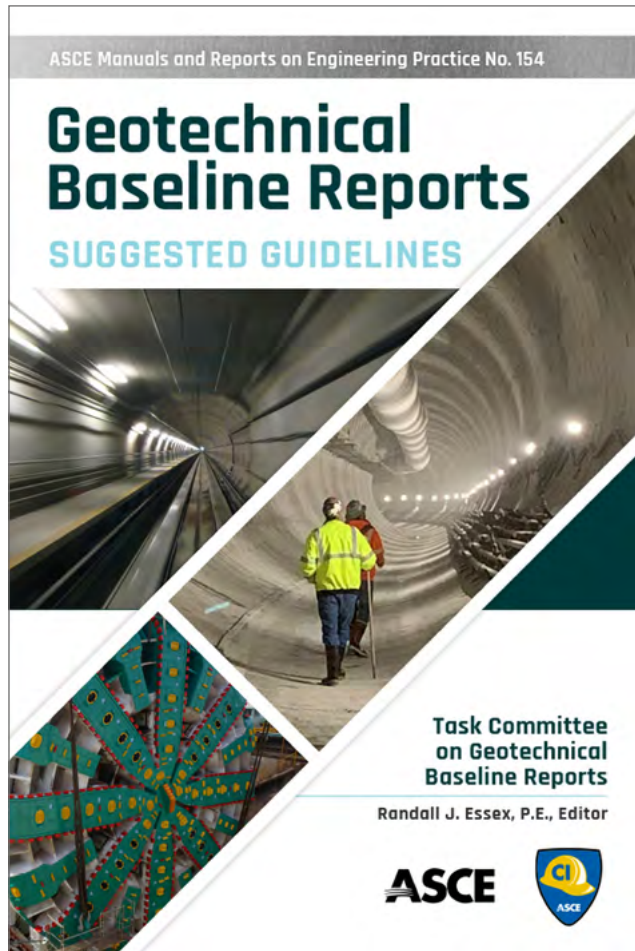
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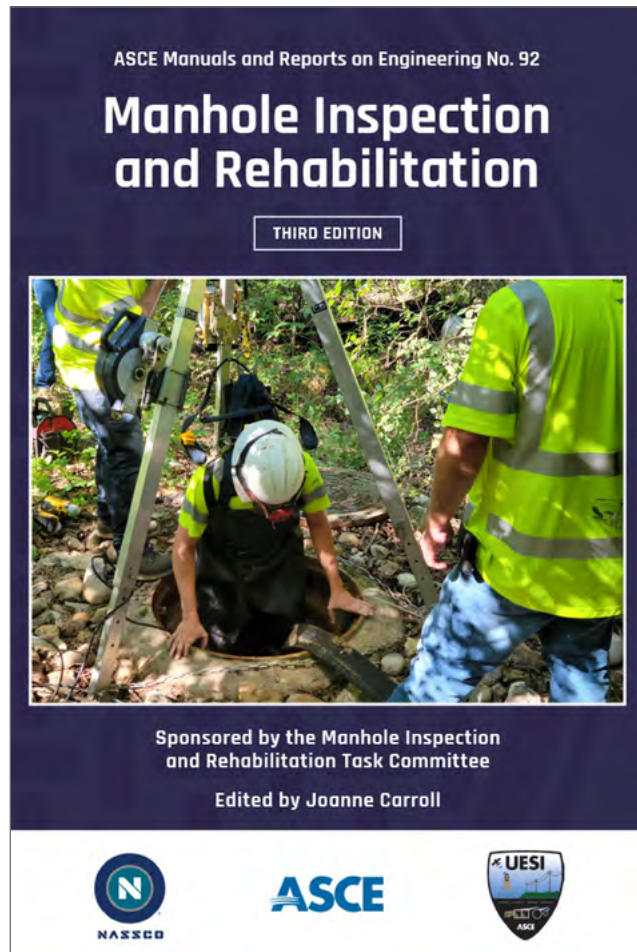
- Improvement of GBRs through more concise organization and better presentation and wording of baselines.
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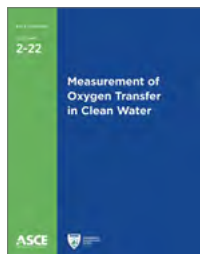
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## MEASUREMENT OF OXYGEN TRANSFER IN CLEAN WATER

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ASCE/SEI 2-22

Provides the latest methods for measuring the rate of oxygen transfer from diffused gas and mechanical oxygenation devices to water. This standard aims to be general enough to be applied to all clean water unsteady-state tests and specific enough to incorporate all essential procedures.

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Michael O'Rourke

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## STANDARD FOR MITIGATION OF DISPROPORTIONATE COLLAPSE POTENTIAL IN BUILDINGS AND OTHER STRUCTURES

American Society of Civil Engineers  
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Provides a consensus perspective for mitigating disproportionate collapse. This publication describes minimum requirements for planning, assessment, analysis, material selection, design and detailing, construction, and qualification testing to mitigate disproportionate collapse of new and existing buildings and other structures.

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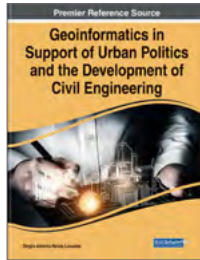
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## ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING TECHNIQUES FOR CIVIL ENGINEERING

Edited by Vagelis Plevris, Afaq Ahmad & Nikos D Lagaros

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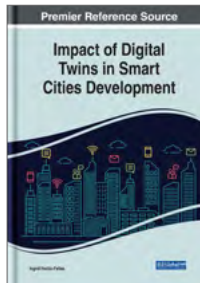
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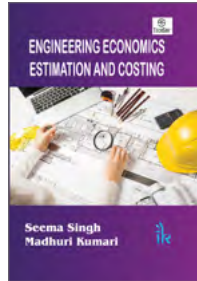
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Provides insights regarding the global landscape for current digital twin research and deployments and highlights some of the challenges and opportunities faced during large-scale adoptions. Critical domains such as ethics, data governance, cybersecurity, inclusion, diversity, and sustainability are also addressed and considered.

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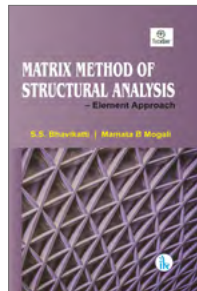
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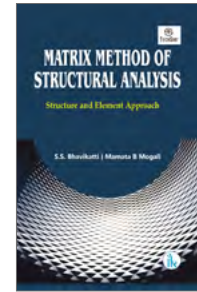
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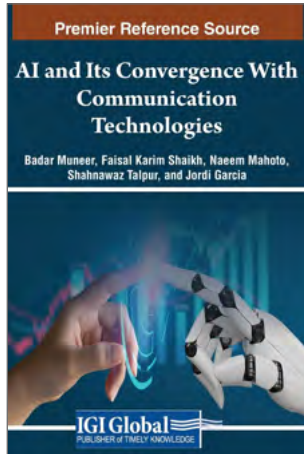
*Johannes Haarhoff*

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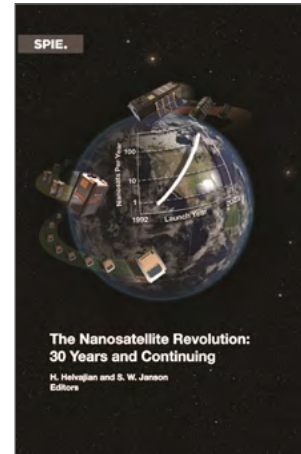
Badar Muneer et al

Offers an interdisciplinary platform that provides a comprehensive overview of the state-of-the-art research and practical challenges related to the AI convergence with ICT. It is designed for engineers, professionals, scientists, and academicians, providing them with insights into the ICT industry and research from an AI expert perspective. Readers associated with the field of computer science, information technology, software engineering, telecommunication, and electronics engineering will find this book beneficial.

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### 30 Years and Continuing

Edited by H. Helvajian & S.W. Janson

Press Monographs, Vol. 347

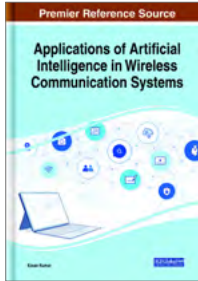
Assembles chapters from contributors across our planet to document technologies, applications, missions, licensing requirements, and lessons learned by individuals and organisations that have participated in the nanosatellite revolution. This book is not intended as a 'how to' or as a university reference to design, build, and fly nanosatellites but as a deeper-level reference on what has and hasn't worked in previous nanosatellite programs. Many chapters act as a historical reference for particular programs.

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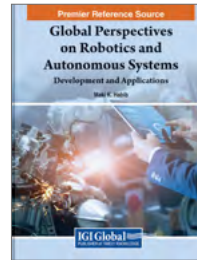
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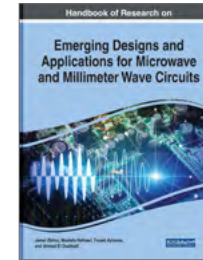
Describes the evolution of robotics and autonomous systems, their

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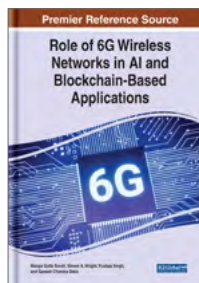
*Edited by Hadi Alasti*

Covers topics such as algorithms, implementations, examples, and research in 5G, 6G, IoT, and cloud

computing for application in industry 4.0. The book provides a guideline, case-study reference, and connection point for stepping towards industry 4.0 based on experience of research, and experiments.

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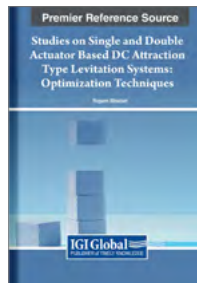
*Edited by Malaya Dutta Borah et al*

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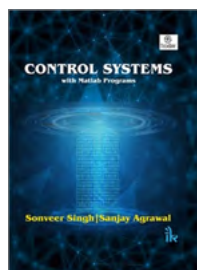
The field of DC attraction-type levitation systems (DCALS) faces challenges that hinder its optimal

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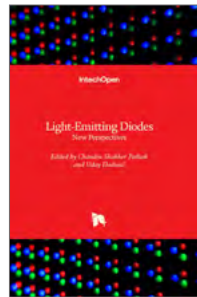
The purpose of this book is to present some uses of the Kalman filter (KF) in engineering activities that can produce a robust and technically acceptable result while keeping as close as possible to the optimal (most accurate) solution.

KF sub-optimization is often

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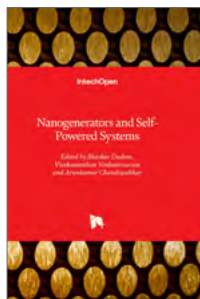
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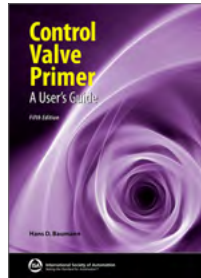
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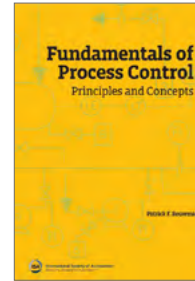
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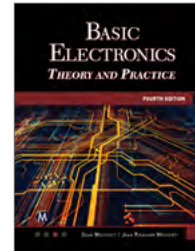
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Arjun Chaudhuri, Ching-Yuan Chen &amp; Krishnendu Chakrabarty

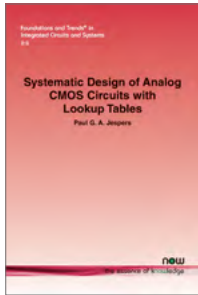
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In this monograph, roadblocks that need to be understood and

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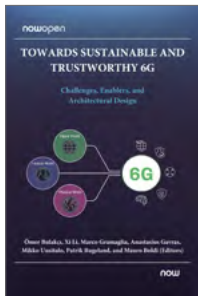
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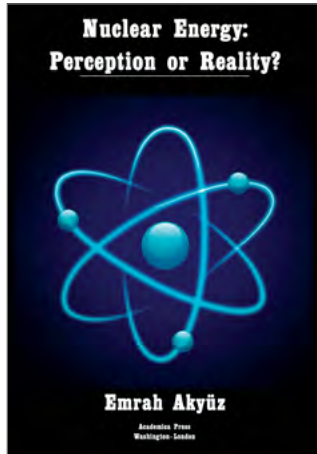
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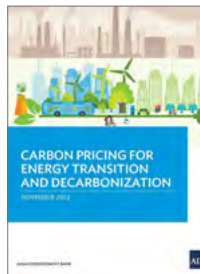
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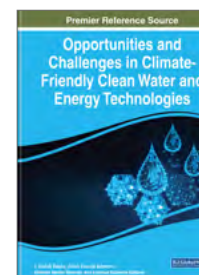
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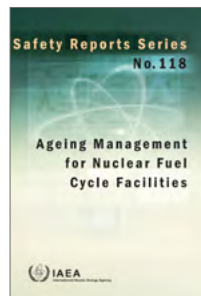
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## AGEING MANAGEMENT FOR NUCLEAR FUEL CYCLE FACILITIES

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## APPLICATION OF PROBABILISTIC METHODS FOR THE SAFETY ASSESSMENT AND THE RELIABLE OPERATION OF RESEARCH REACTORS

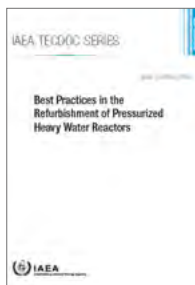
IAEA

*Safety Reports Series, No. 107*

Intended to be used by operating organizations, regulatory bodies and technical support organizations when performing or reviewing research reactor assessments in which probabilistic methods are applied.

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## BEST PRACTICES IN THE REFURBISHMENT OF PRESSURIZED HEAVY WATER REACTORS

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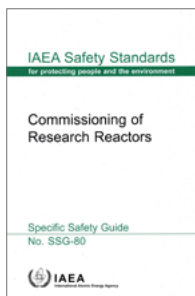
*IAEA TECDOC Series, No. 2015*

Presents some highlights of past and ongoing pressurized heavy water reactor refurbishment projects. The publication

summarizes the lessons learned and knowledge gained. It is intended to be of use to operators and other stakeholders embarking upon a PHWR facility refurbishment project.

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## COMMISSIONING OF RESEARCH REACTORS

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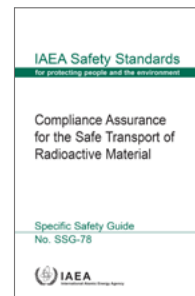
*IAEA Safety Standards Series, No. SSG-80*

Provides specific recommendations on establishing a program and organization for commissioning of research reactors. It covers the commissioning stages, procedures, reports and documentation and

provides guidance for commissioning of new experimental devices and modifications.

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## COMPLIANCE ASSURANCE FOR THE SAFE TRANSPORT OF RADIOACTIVE MATERIAL

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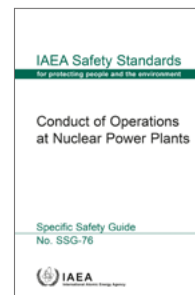
*IAEA Safety Standards Series, No. SSG-78*

This Safety Guide provides recommendations on actions that competent authorities should take

to ensure compliance with the applicable regulations for the safe transport of radioactive material.

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## CONDUCT OF OPERATIONS AT NUCLEAR POWER PLANTS

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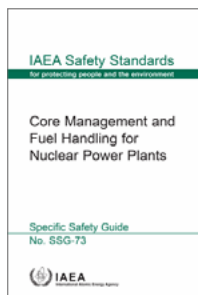
*IAEA Safety Standards Series, No. SSG-76*

Aimed primarily at operating organizations of nuclear power plants (NPPs) and regulatory bodies, this Safety Guide provides specific recommendations to ensure

that operations in NPPs are conducted in a safe, effective, thorough and professional manner.

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## CORE MANAGEMENT AND FUEL HANDLING FOR NUCLEAR POWER PLANTS

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*IAEA Safety Standards Series, No. SSG-73*

Aimed primarily at operating organizations of nuclear power plants and regulatory bodies, this Safety Guide covers the safety

objective of core management and the basic tasks of the core management program.

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## CORE MANAGEMENT AND FUEL HANDLING FOR RESEARCH REACTORS

IAEA

*IAEA Safety Standards Series, No. SSG-82*

Provides specific recommendations on core management and fuel handling for research reactors, including handling and storage of fresh fuel, irradiated fuel, core components and neutron sources, to meet the relevant requirements of IAEA Safety Standards Series No. SSR-3, *Safety of Research Reactors*.

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## CRAFT

**The International Project on Complementary Safety Reports (2011 - 2014)**

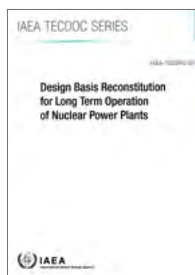
IAEA

*IAEA TECDOC Series, No. 2017*

Presents the results of the CRAFT project and provides detail to supplement current IAEA safety standards for addressing the demonstration of safety for representative facilities and activities associated with the predisposal management of radioactive waste.

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## DESIGN BASIS RECONSTITUTION FOR LONG TERM OPERATION OF NUCLEAR POWER PLANTS

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*IAEA TECDOC Series, No. 2018*

Presents essential elements such as the drivers, goals, methods, roles, responsibilities and interfaces for

conducting an effective design basis reconstitution. The publication also describes current challenges, operating experience, good practices, and lessons learned associated with design basis reconstitution for long term operation.

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## DETERMINATION OF ENVIRONMENTAL REMEDIATION END STATES

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Sites with radioactive contamination may require action to protect people and the environment and to enable transition to a different future use. To support environmental management of these sites, this publication presents a process to determine the 'end state' of the site to be remediated or being remediated, and implications for the site future use and necessary controls.

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Reports on the findings of an IAEA Coordinated Research Project (CRP) which investigated the use of small modular reactors for energy neutral mineral processing. The publication summarizes the results of the CRP and includes 12 case studies conducted by the participating Member States.

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## EXPERIENCE IN APPLYING IAEA PRINCIPLES FOR DESIGN SAFETY TO NEW NUCLEAR POWER PLANTS

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IAEA TECDOC Series, No. 2021

Assists in developing a common understanding of practices in Member States in the consideration of requirements introduced by IAEA Safety Standards Series No. SSR-2/1, *Safety of Nuclear Power Plants: Design* and the supporting safety guides, for the design and safety assessment of new nuclear power plants.

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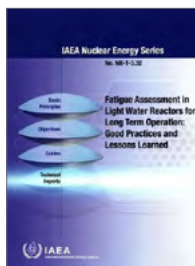
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IAEA Nuclear Energy Series, No. NW-T-1.31

Supports Member States efforts towards improved preparedness related to the management of radioactive waste in the event of a nuclear or radiological accident. The publication builds on experiences gained following historic accidents to develop lessons learned.

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## FATIGUE ASSESSMENT IN LIGHT WATER REACTORS FOR LONG TERM OPERATION

Good Practices and Lessons Learned

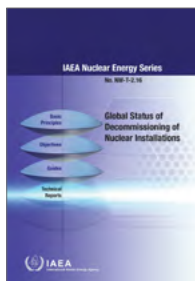
IAEA

IAEA Nuclear Energy Series,  
No. NR-T-3.32

Provides practical guidelines on how to identify and manage fatigue issues in NPPs. It explains the mechanism of fatigue, identifies which elements are the major contributors, and details how fatigue can be minimized in the design phase for new NPPs.

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## GLOBAL STATUS OF DECOMMISSIONING OF NUCLEAR INSTALLATIONS

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Presents the outcomes of a collaborative study to analyze the status of nuclear decommissioning activities around the world as of

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## HAZARDS ASSOCIATED WITH HUMAN INDUCED EXTERNAL EVENTS IN SITE EVALUATION FOR NUCLEAR INSTALLATIONS

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## IAEA SAFEGUARDS GLOSSARY

2022 Edition

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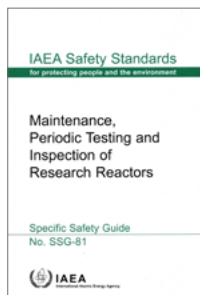
*International Nuclear Verification Series, No. 3 (Rev. 1)*

Since the last edition of the *IAEA Safeguards Glossary*, IAEA safeguards implementation has continued to evolve, with a greater emphasis on

'State as a whole' considerations in the development of State level safeguards approaches. This new edition reflects these developments and represents terms that are specific and unique to IAEA safeguards.

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## MAINTENANCE, PERIODIC TESTING AND INSPECTION OF RESEARCH REACTORS

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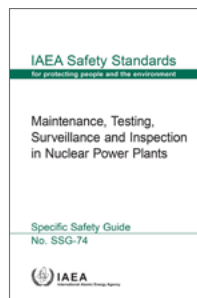
*IAEA Safety Standards Series, No. SSG-81*

Provides specific recommendations on the maintenance, periodic testing and inspection of research reactors to meet the relevant requirements of *IAEA Safety*

*Standards Series No. SSR-3, Safety of Research Reactors.*

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## MAINTENANCE, TESTING, SURVEILLANCE AND INSPECTION IN NUCLEAR POWER PLANTS

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*IAEA Safety Standards Series, No. SSG-74*

Written for use by operating organisations of nuclear power plants and regulatory bodies,

this Safety Guide provides specific recommendations on maintenance, testing, surveillance and inspection.

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## MANAGEMENT OF AGEING AND OBsolescence OF INSTRUMENTATION AND CONTROL SYSTEMS AND EQUIPMENT IN NUCLEAR POWER PLANTS AND RELATED FACILITIES THROUGH MODERNIZATION

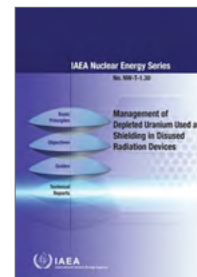
IAEA

*IAEA Nuclear Energy Series, NR-T-3.34*

The purpose of this publication is to assist Member States in developing strategies to address ageing and obsolescence issues for instrumentation and control systems. It provides detail on modernization considerations and information from relevant recent operator experience.

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## MANAGEMENT OF DEPLETED URANIUM USED AS SHIELDING IN DISUSED RADIATION DEVICES

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## METHODOLOGIES FOR ASSESSING PIPE FAILURE RATES IN ADVANCED WATER COOLED REACTORS

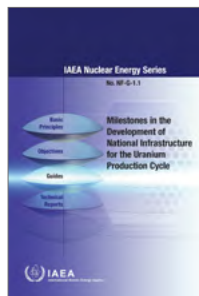
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This publication, which draws upon the outcome of an IAEA coordinated research project, presents methodologies for assessing pipe failure rates in advanced water cooled reactors (WCRs), including a comprehensive review of good practices for the assessment of piping reliability parameters for advanced WCRs.

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## MODIFICATIONS TO NUCLEAR POWER PLANTS

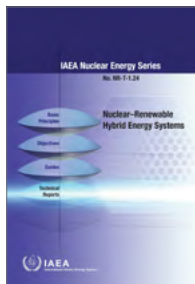
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Aimed primarily at regulatory bodies and the operating organizations of nuclear power plants, this Safety Guide provides recommendations on controlling activities relating to modifications to nuclear power plants.

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## THE OPERATING ORGANIZATION FOR NUCLEAR POWER PLANTS

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IAEA Safety Standards Series, No. SSG-72

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These recommendations are aimed at operating organisations of nuclear power plants and regulatory bodies. It covers the concept of operational limits and conditions, their content as applicable to nuclear power plants, and the responsibilities of the operating organization for their establishment, modification, compliance and documentation.

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## OPERATIONAL LIMITS AND CONDITIONS AND OPERATING PROCEDURES FOR RESEARCH REACTORS

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IAEA Safety Standards Series No. SSG-83

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## POST-IRRADIATION EXAMINATION TECHNIQUES FOR RESEARCH REACTOR FUELS

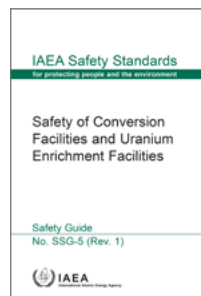
IAEA

IAEA Nuclear Energy Series No. NF-T-2.6

Post-irradiation examination (PIE) is an indispensable step in the selection of new or improved research reactor fuel, and in the characterization and understanding of its in-core behaviour. This publication provides an introduction to PIE techniques.

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## SAFETY OF CONVERSION FACILITIES AND URANIUM ENRICHMENT FACILITIES

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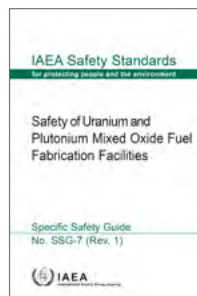
IAEA Safety Standards Series, No. SSG-5 (REV. 1)

Provides recommendations on site evaluation, design, construction, commissioning, operation and preparation for decommissioning

of conversion facilities and uranium enrichment facilities to meet the applicable requirements established in IAEA Safety Standards No. SSR-4, *Safety of Nuclear Fuel Cycle Facilities*.

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## SAFETY OF URANIUM AND PLUTONIUM MIXED OXIDE FUEL FABRICATION FACILITIES

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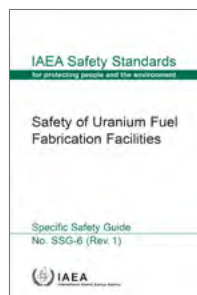
IAEA Safety Standards Series, No. SSG-7 (Rev. 1)

Provides specific recommendations on the safety of uranium and plutonium mixed oxide (MOX) fuel

fabrication facilities. This revised Safety Guide reflects current operational practices at MOX fuel fabrication facilities.

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## SAFETY OF URANIUM FUEL FABRICATION FACILITIES

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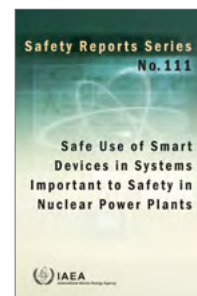
IAEA Safety Standards Series, No. SSG-6 (REV. 1)

Provides specific recommendations on the safety of uranium fuel fabrication facilities and describes the actions, conditions and procedures for meeting safety requirements. The guide addresses

the new safety requirements established by IAEA Safety Standards SSR-4, *Safety of Nuclear Fuel Cycle Facilities*.

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## SAFE USE OF SMART DEVICES IN SYSTEMS IMPORTANT TO SAFETY IN NUCLEAR POWER PLANTS

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Safety Reports Series, No. 111

The safety aspects and design criteria associated with the use of industrial commercial smart devices in systems important to

safety considered in this publication include functional suitability, quality, qualification, certification by non-nuclear organizations using non-nuclear standards, and integration of the smart device into existing systems.

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## SUSTAINING OPERATIONAL EXCELLENCE AT NUCLEAR POWER PLANTS

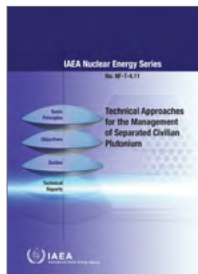
IAEA

IAEA Nuclear Energy Series No. NR-G-3.1

Complementing existing standards and guides on the operational excellence of nuclear power plants, this publication supports leaders of owner/operating organizations by providing strategic responses to current business challenges and effective measures to sustain high performance levels.

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## TECHNICAL APPROACHES FOR THE MANAGEMENT OF SEPARATED CIVILIAN PLUTONIUM

IAEA

*IAEA Nuclear Energy Series  
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Aims to outline credible technical options for managing separated plutonium. There is no attempt

to rank or rate any of the options, instead the intent is to inform the reader of the technical merits of the various options and the state of their development.

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## TEN YEARS OF REMEDIATION EFFORTS IN JAPAN

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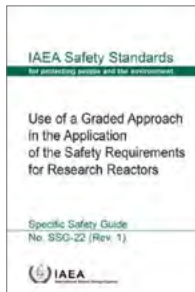
*IAEA TECDOC Series, No. 2020*

The accident at the Fukushima Daiichi Nuclear Power Plant (NPP) led to the radioactive contamination of large areas. This publication presents information on the

decontamination process; waste management; monitoring; stakeholder issues; knowledge management; remediation, recovery and regulatory issues.

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## USE OF A GRADED APPROACH IN THE APPLICATION OF THE SAFETY REQUIREMENTS FOR RESEARCH REACTORS

IAEA

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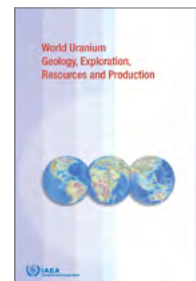
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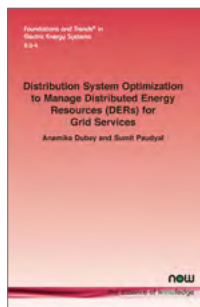
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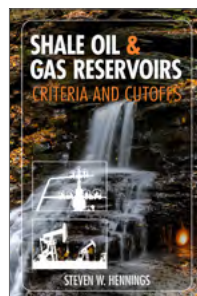
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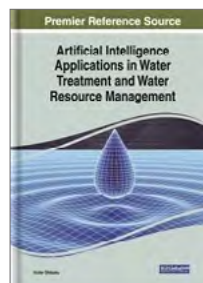
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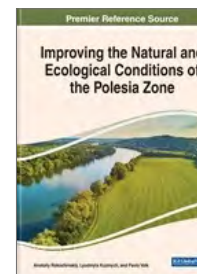
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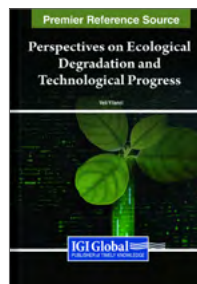
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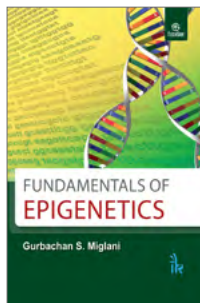
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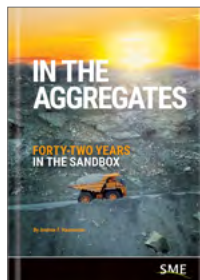
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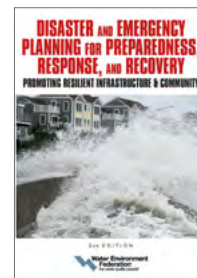
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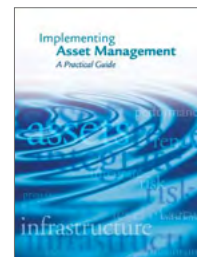
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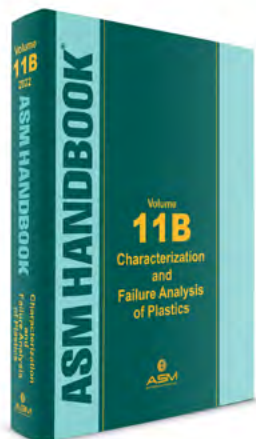
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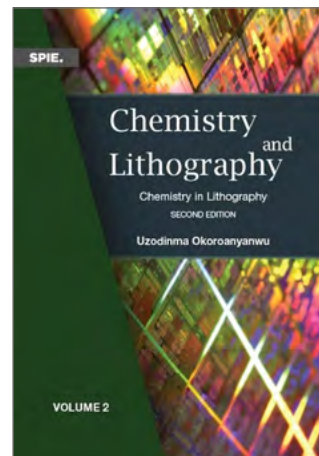
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## TOOLING FOR COMPOSITE PARTS & ASSEMBLIES

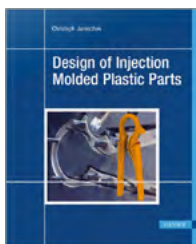
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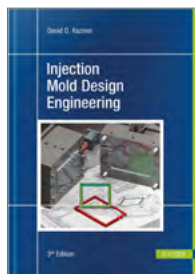
Christoph Jaroschek

Presents a new perspective on the design of plastic parts. The complex process of manufacturing a plastic part becomes holistically understandable as a link is created between the molder, the mold

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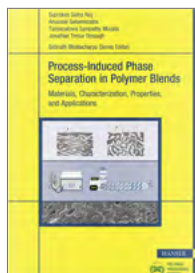
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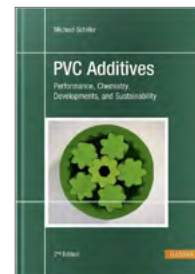
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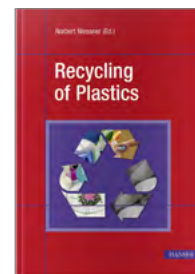
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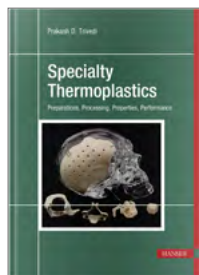
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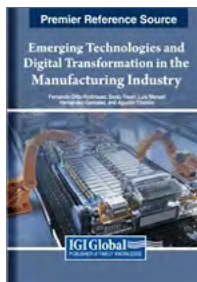
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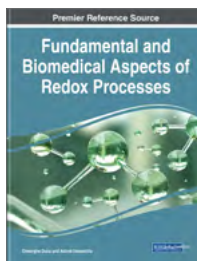
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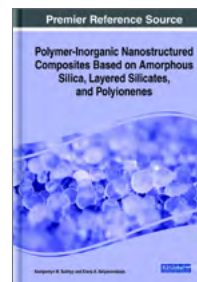
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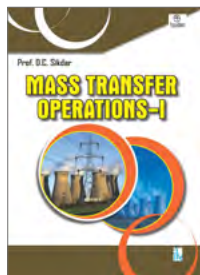
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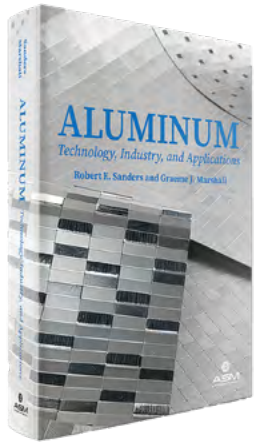
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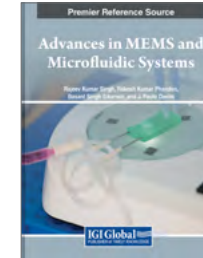
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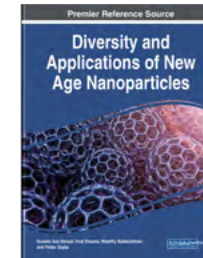
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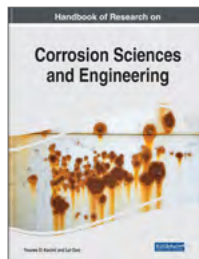
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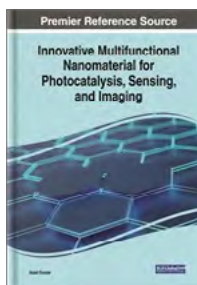
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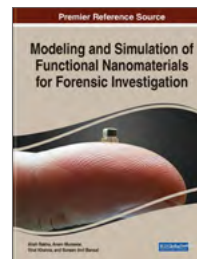
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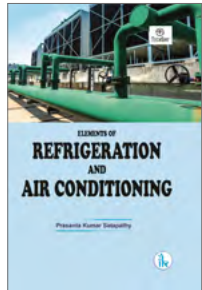
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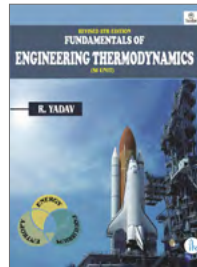
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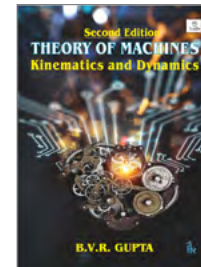
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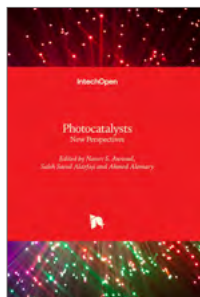
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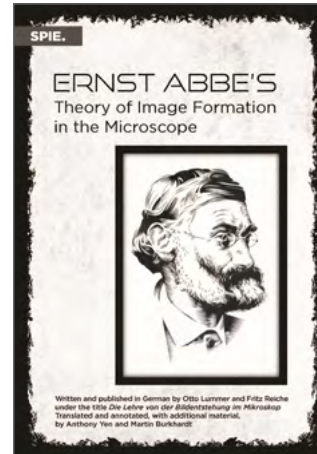
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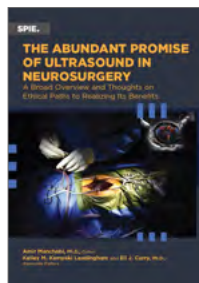
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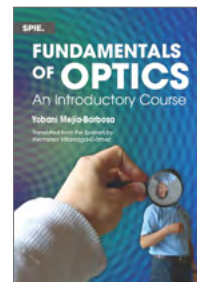
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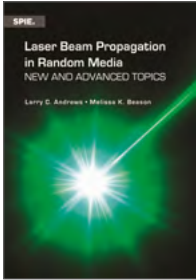
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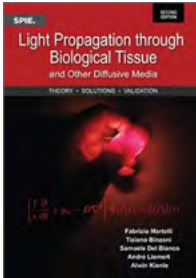
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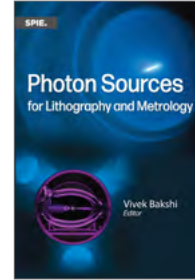
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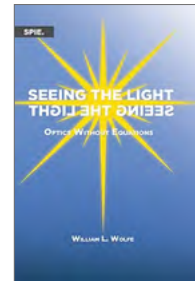
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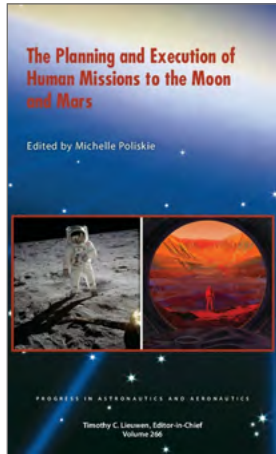
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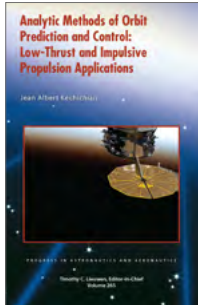
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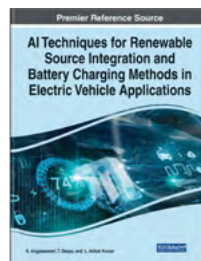
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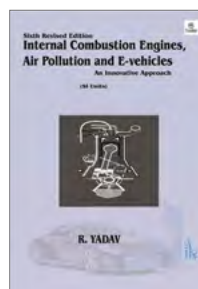
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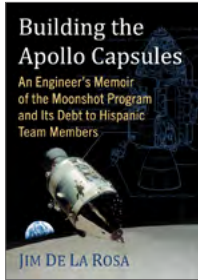
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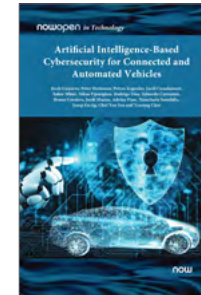
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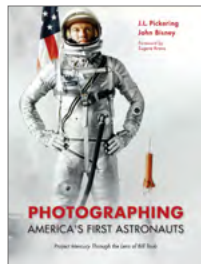
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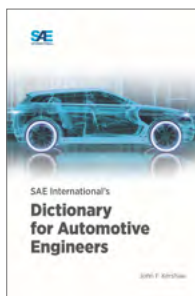
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Agreement concerning  
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**ADR**  
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UNITED NATIONS

## AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR 2023)

**Applicable as from 1 January 2023**

*United Nations Economic Commission for Europe*

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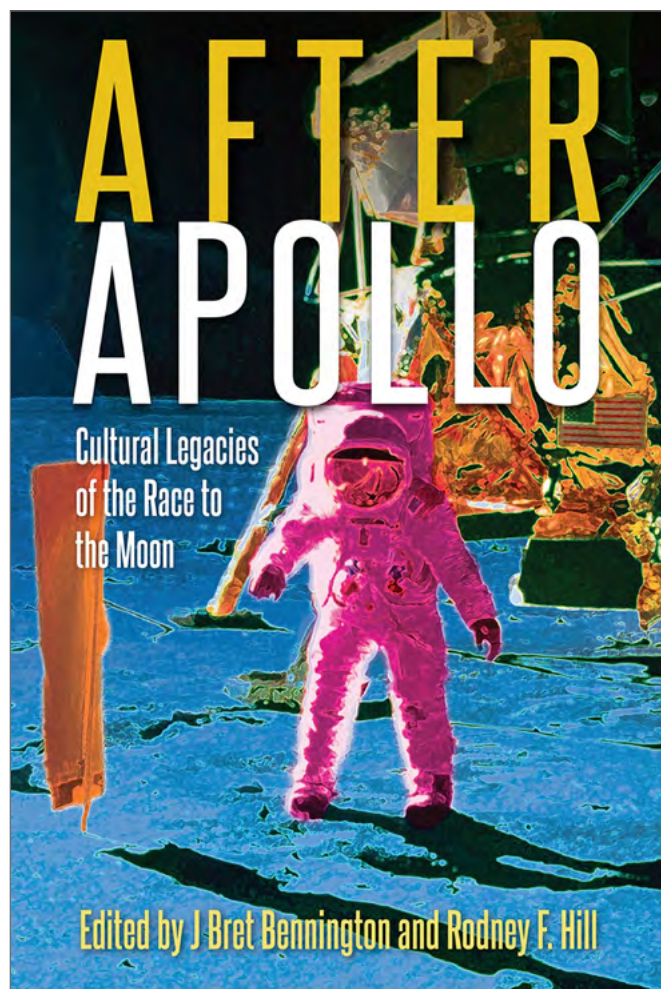
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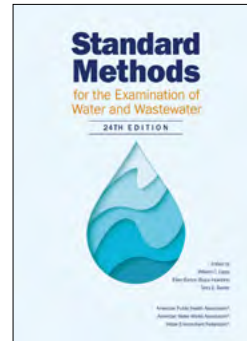
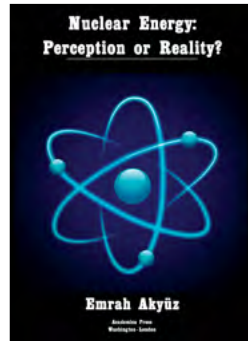
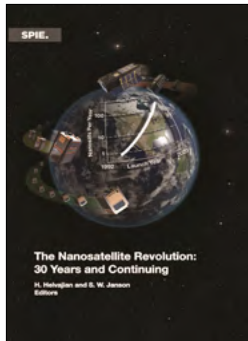
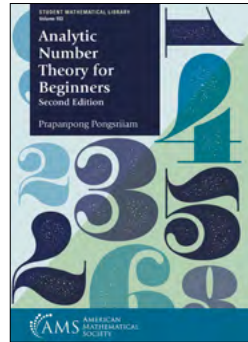
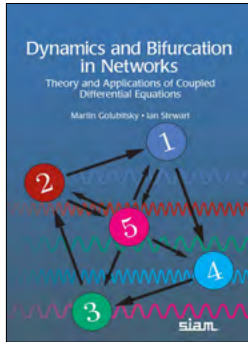
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