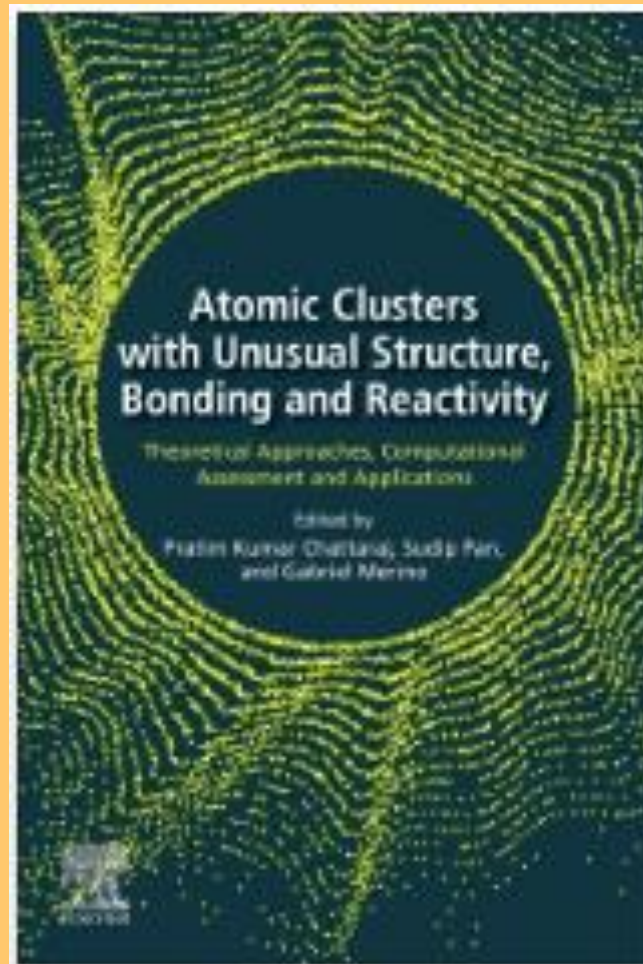


# BUKU BAHARU MAC 2024

@PERPUSTAKAAN LINGKUNGAN KEDUA





**Title** : Atomic Clusters with Unusual Structure, Bonding and Reactivity: Theoretical Approaches, Computational Assessment and Applications  
**Editors** : Gabriel Merino, Pratim Kumar Chattaraj, Sudip Pan  
**ISBN** : 9780128229439  
**Publisher** : Elsevier Science  
**Year** : 2023

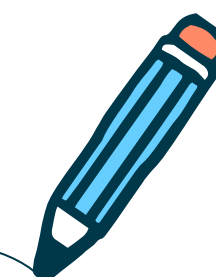
**Abstract:**

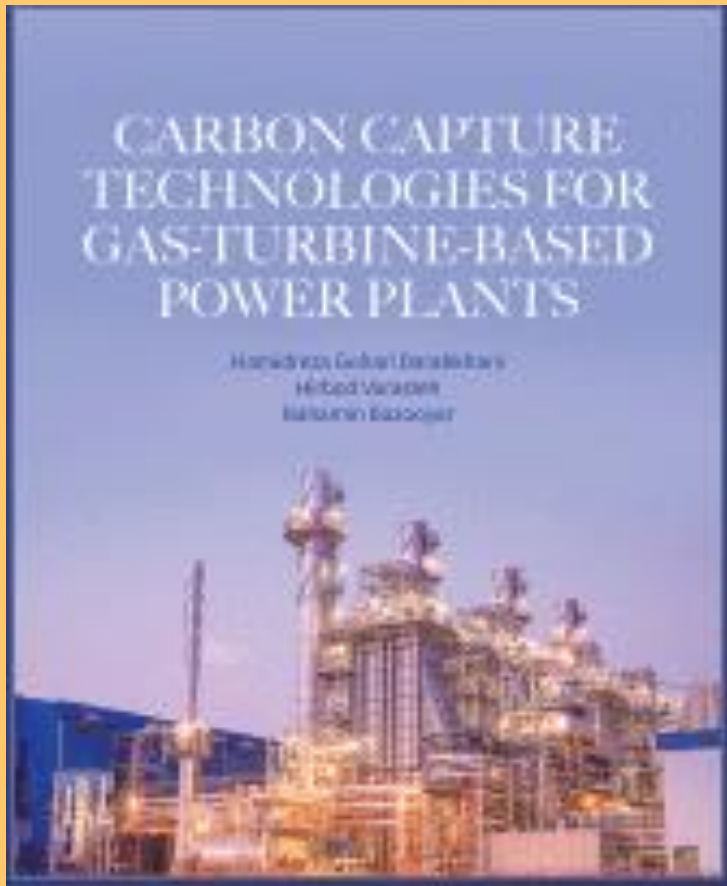
Atomic Clusters with Unusual Structure, Bonding and Reactivity: Theoretical Approaches, Computational Assessment and Applications reviews the latest computational tools and approaches available for accurately assessing the properties of a cluster, while also highlighting how such clusters can be adapted and utilized for the development of novel materials and applications. Sections provide an introduction to the computational methods used to obtain global minima for clusters and effectively analyze bonds, outline experimental approaches to produce clusters, discuss specific applications, and explore cluster reactivity and usage across a number of fields. Drawing on the knowledge of its expert editors and contributors, this book provides a detailed guide to ascertaining the stability, bonding and properties of atomic clusters. Atomic clusters, which exhibit unusual properties, offer huge potential as building blocks for new materials and novel applications, but understanding their properties, stability and bonding is essential in order to accurately understand, characterize and manipulate them for further use. Searching for the most stable geometry of a given cluster is difficult and becomes even more so for clusters of medium and large sizes, where the number of possible isomers sharply increase, hence this book provides a unique and comprehensive approach to the topic and available techniques and applications.



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**For more info:**  
<http://surl.li/rtvfl>





**Title** :Carbon Capture Technologies for Gas-Turbine-Based Power Plants  
**Author** :Hamidreza Gohari Darabkhani, Hirbod Varasteh, Bahamin Bazooyar  
**ISBN** :9780128188682  
**Publisher** :Elsevier Science  
**Year** : 2023

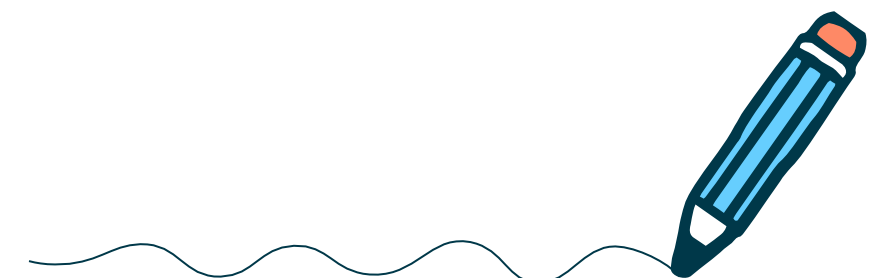
**Abstract:**

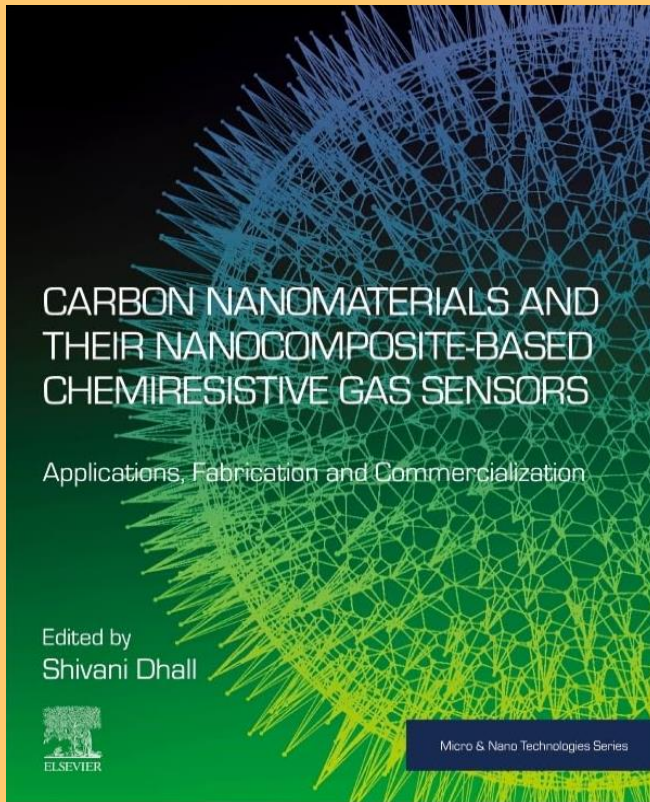
Carbon Capture Technologies for Gas-Turbine-Based Power Plants explores current progress in one of the most capable technologies for carbon capture in gas-turbine-based power plants. It identifies the primary benefits and shortcomings of oxy-fuel combustion CO<sub>2</sub> capture technology compared to other capture technologies such as pre-combustion and post-combustion capture. This book examines over 20 different oxy-combustion turbine (oxyturbine) power cycles by providing their main operational parameters, thermodynamics and process modelling, energy and exergy analysis and performance evaluation. The conventional natural gas combined cycle (NGCC) power plant with post-combustion capture used as the base-case scenario. The design procedure and operational characteristics of a radial NO<sub>x</sub>-less oxy-fuel gas turbine combustor are presented with CFD simulation and performance analysis of the heat exchanger network and turbomachinery. Overview of oxygen production and air separation units (ASU) and CO<sub>2</sub> compression and purification units (CPU) are also presented and discussed. The most advanced stages of development for the leading oxyturbine power cycles are assessed using techno-economic analysis, sensitivity, risk assessments and levelized cost of energy (LCOE) and analysing technology readiness level (TRL) and development stages. The book concludes with a road map for the development of future gas turbine-based power plants with full carbon capture capabilities using the experiences of the recently demonstrated cycles.



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**Title** : Carbon Nanomaterials and Their Nanocomposite-Based Chemiresistive Gas Sensors: Applications, Fabrication and Commercialization  
**Editor** : Shivani Dhall  
**ISBN** : 9780128228371  
**Publisher** : Elsevier Science  
**Year** : 2023

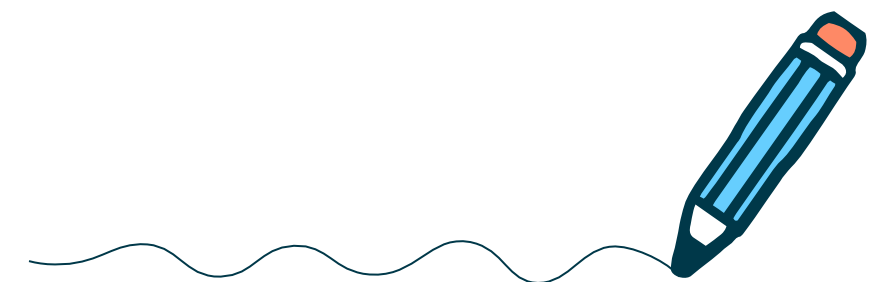
**Abstract:**

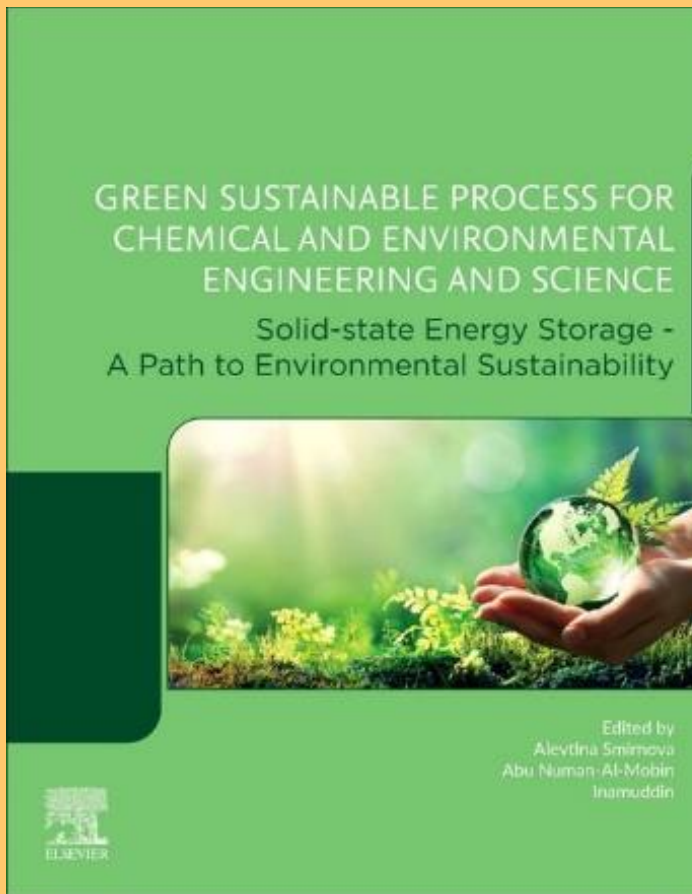
Carbon Nanomaterials and their Nanocomposite-Based Chemiresistive Gas Sensors: Applications, Fabrication and Commercialization sets out how carbon nanomaterials based chemiresistive gas sensor are made, and their applications at lab and industrial levels. The book focuses on major advances in the field of chemiresistive gas sensors in recent years and their potential applications in environmental monitoring and healthcare. The book also provides systematic and effective guidelines to the researchers as well as learners about sensor, their fabrication and applications. Chemiresistive sensors are widely used in automation of numerous industrial processes as well as for everyday monitoring of various activities as public safety, engine performance, medical therapeutics, and in many other situations hence the book will catch the attention of readers and motivate them for advanced research for the development of smart and efficient gas sensors. With full coverage of the state of the art in this active research field, the book will appeal to researchers in a broad range of disciplines, including nanotechnology, engineering, materials science, chemistry and physics.



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**Title** : Green Sustainable Process for Chemical and Environmental Engineering and Science: Solid-State Energy Storage - A Path to Environmental Sustainability  
**Editors** : Gabriel Merino, Pratim Kumar Chattaraj, Sudip Pan  
**ISBN** : 9780128229439  
**Publisher** : Elsevier Science  
**Year** : 2023

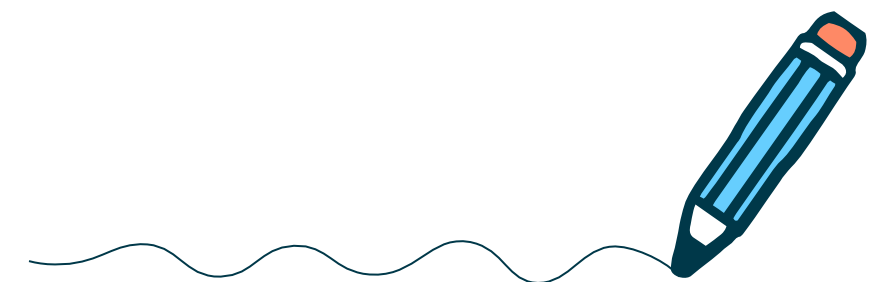
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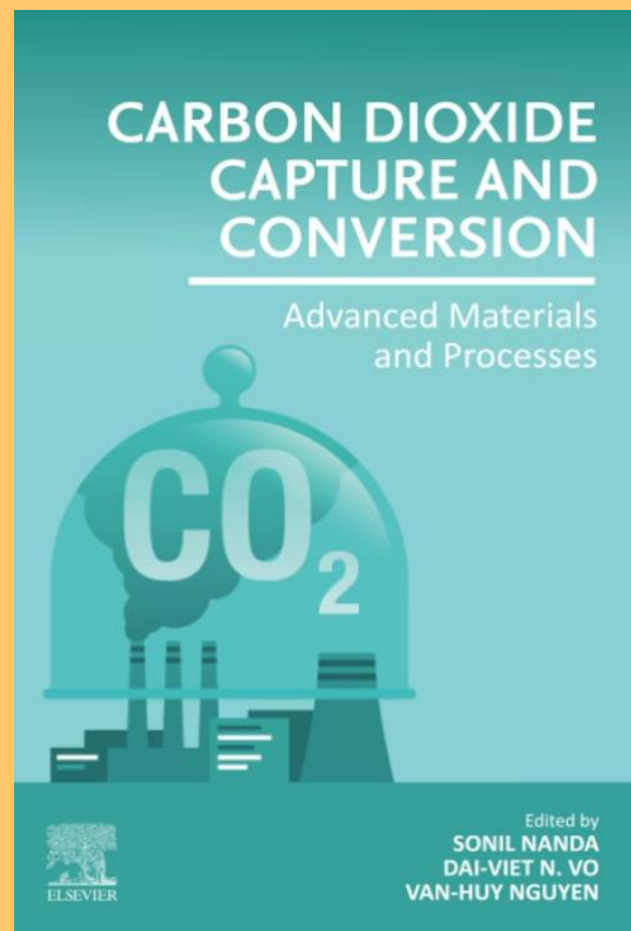
Green Sustainable Process for Chemical and Environmental Engineering and Science: Solid-State Energy Storage - A Path to Environmental Sustainability offers an in-depth analysis of the synthesis methods, manufacturing techniques and underlying mechanisms of ionic and electronic-ion transport in various single phase and multi-phase components for electric power storage, such as lithium and sodium ion batteries, sulfur batteries, and lithium-metal electrochemical systems. Though solid-state batteries are not yet available on the market, many large corporations and small companies pursue the goal of implementing this technology for numerous applications and its transfer to other markets. Includes information regarding solid-state energy storage technology as key to a green and sustainable environment. Describes recent advances in the areas of solid-state ionics, electrochemistry, materials science and engineering, and sustainable energy. Introduces materials synthesis approaches, including chemicals in aqueous and organic solutions, mechanical ball-milling, and physical approaches, including ink-jet and physical vapor deposition. Provides electrochemical data and in-situ-operando approaches for the evaluation of solid-state battery performance.



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**No. Panggilan :**  
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**Lokasi : Rak Pameran, Aras 2**  
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**Title** : Carbon Dioxide Capture and Conversion: Advanced Materials and Processes  
**Editors** : Dai-Viet N. Vo, Sonil Nanda, Van-Huy Nguyen  
**ISBN** : 9780323855853  
**Publisher** : Elsevier Science  
**Year** : 2022

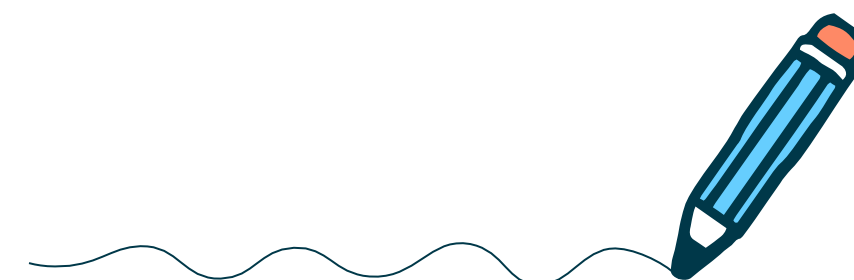
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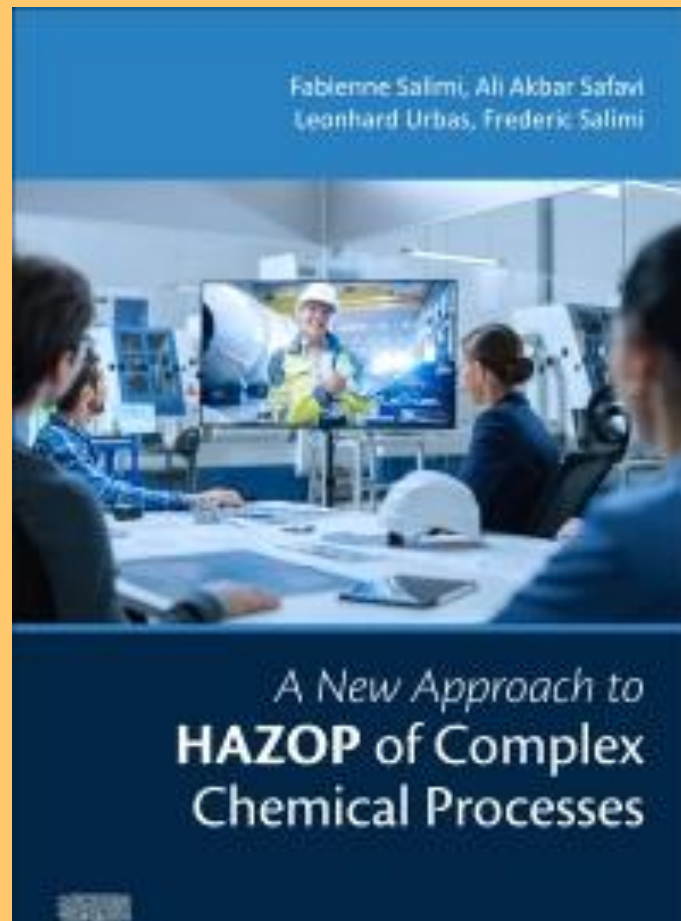
Carbon Dioxide Capture and Conversion: Advanced Materials and Process provides information about the fundamental principles and recent development of various methods and processes for CO<sub>2</sub> mitigation and transformation. Beginning with a brief overview of recent advancements in CO<sub>2</sub> capture and valorization technologies, the book elaborates on CO<sub>2</sub> capture and conversion by covering nanoporous materials, biomaterials, innovative solvents, advanced membrane technology, nanocatalyst synthesis and design, cutting-edge characterization techniques as well as reaction mechanisms and kinetics. In addition to techno-economic evaluation and life-cycle assessment for CO<sub>2</sub> capture and conversion processes, future perspectives, opportunities and current challenges regarding these processes in terms of their industrial applications, are systematically discussed. Carbon Dioxide Capture and Conversion: Advanced Materials and Process is, therefore, an essential resource for academic researchers, postgraduates, scientists, and engineers seeking fundamental knowledge and practical applications for use in their research and development, studies and industrial operations.



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**Lokasi : Rak Pameran, Aras 2**  
**For more info:**  
<http://surl.li/rtvmw>





**Title** : A New Approach to HAZOP of Complex Chemical Processes  
**Author** : Fabienne-Fariba Salimi, Ali Akbar Safavi, Leonhard Urbas, Frederic Salimi  
**ISBN** : 9780323905626  
**Publisher** : Elsevier Science  
**Year** : 2023

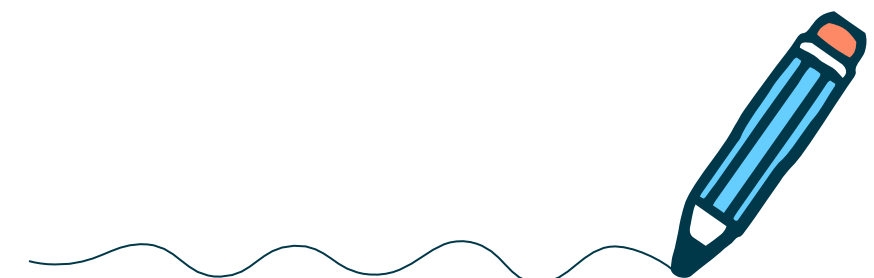
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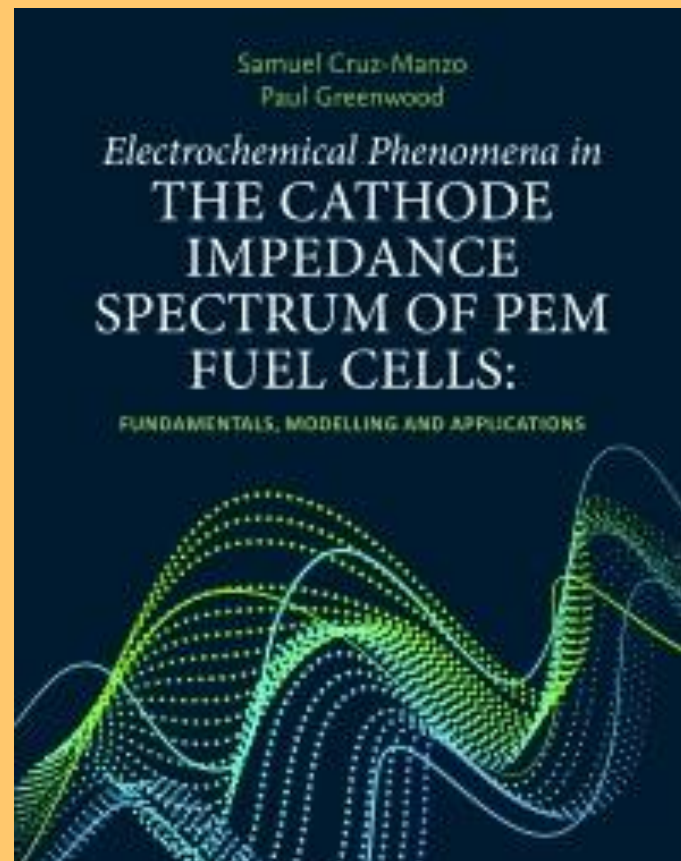
A New Approach to HAZOP of Complex Chemical Processes provides practical methods to identify and categorize chemical process complexities systematically. The book follows a holistic assessment of risks and required safeguards which enables readers to define the boundaries of HAZOP 4.0 accurately. The book is written by authors who have decades of experience in advanced process monitoring and artificial intelligence to support HAZOP teams with a holistic dynamic simulation and multivariable monitoring of the complex systems, and to assess historical failure and accident data and information using artificial intelligence techniques in a user-friendly way. Presents complexity assessment and management to the conventional HAZOP ? Provides multivariable monitoring to dynamic simulation for a holistic hazard identification and process safeguards requirements ? Describes AI to support the HAZOP team with code-based requirements and historical failure and accident data ? Explains AI to find the dynamic behavior of process based on empirical data without the models with simplification assumptions.



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**Lokasi : Rak Pameran, Aras 2**  
**For more info:**  
<http://surl.li/rtvtu>





**Title** : Electrochemical Phenomena in the Cathode Impedance Spectrum of PEM Fuel Cells: Fundamentals, Modelling and Applications  
**Author** : Samuel Cruz-Manzo, Paul Greenwood  
**ISBN** : 9780323906074  
**Publisher** : Elsevier Science  
**Year** : 2022

**Abstract:**

Electrochemical Phenomena in the Cathode Impedance Spectrum of PEM Fuel Cells: Fundamentals, Modelling, and Applications establishes how the electrochemical and diffusion mechanisms of a polymer electrolyte membrane fuel cell (PEMFC) are related to electrochemical impedance spectroscopy (EIS) measurements using physics-based impedance models derived from fundamental electrode and diffusion theories. The contribution of the different phenomena occurring at the different layers comprising the cathode on the impedance response of the PEMFC is revealed through EIS-modelling analysis. The relation between EIS measurements and polarisation curves representing the performance of PEMFCs is established. Insight is gained into how the EIS response of the PEMFC changes at different operating conditions e.g. relative humidity, load demand, gas reactant stoichiometry and temperature using physics-based impedance models. The application of impedance models with EIS measurements carried out in the individual cells comprising a PEMFC stack is demonstrated, while recent modelling approaches and other impedance models reported in the literature to represent the EIS response of the PEMFC are also considered and discussed.



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