

Fuel Cell Science: Theory, Fundamentals, and Biocatalysis

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Fuel Cell Science: Theory, Fundamentals, and Biocatalysis From Wiley

A comprehensive survey of theoretical and experimental concepts in fuel cell chemistry

Fuel cell science is undergoing significant development, thanks, in part, to a spectacular evolution of the electrocatalysis concepts, and both new theoretical and experimental methods. Responding to the need for a definitive guide to the field, Fuel Cell Science provides an up-to-date, comprehensive compendium of both theoretical and experimental aspects of the field.


Designed to inspire scientists to think about the future of fuel cell technology, Fuel Cell Science addresses the emerging field of bio-electrocatalysis and the theory of heterogeneous reactions in fuel cell science and proposes potential applications for electrochemical energy production. The book is thorough in its coverage of the electron transfer process and structure of the electric double layer, as well as the development of operando measurements. Among other subjects, chapters describe:

- Recently developed strategies for the design, preparation, and characterization of catalytic materials for fuel cell electrodes, especially for new fuel cell cathodes
- A wide spectrum of theoretical and computational methods, with the aim of developing new fuel cell catalysis concepts and improving existing designs to increase their performance.

Edited by two leading faculty, the book:

- Addresses the emerging fields of bio-electrocatalysis for fuel cells and theory of heterogeneous reactions for use in fuel cell catalysis
- Provides a survey of experimental and theoretical concepts in these new fields
- Shows the evolution of electrocatalysis concepts
- Describes the chemical physics of fuel cell reactions
- Forecasts future developments in electrochemical energy production and conversion

Written for electrochemists and electrochemistry graduate students, electrocatalysis researchers, surface and physical chemists, chemical engineers, automotive engineers, and fuel cell and energy-related researchers, this modern compendium can help today's best minds meet the challenges in fuel science technology.

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Editorial Review

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Andrzej Wieckowski is Professor of Chemistry at the University of Illinois at Urbana-Champaign. Professor Wieckowski pioneered the development of the method now known as Electrochemical NMR (EC-NMR) that combines metal/surface NMR and electrochemistry for studies of interfaces.

Jens K. Nørskov is Professor of Chemical Engineering and Photon Science, Stanford University, and Director of the Center for Interface Science and Catalysis at the SLAC National Accelerator Laboratory. His research interests include the theoretical description of surfaces, catalysis, electrochemistry, materials, nanostructures, and biomolecules.

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