Solid State Electrochemistry

Solid State ElectrochemistrySolid-State ElectrochemistryHandbook of Solid State ElectrochemistrySolid State Electrochemistry and Its Applications to Sensors and Electronic DevicesSolid State Electrochemistry ISolid State Electrochemistry IISolid State ElectrochemistryHandbook of Solid State ElectrochemistrySolid State Electrochemistry and ElectrophysicsSolid State Electrochemistry IJournal of Solid State ElectrochemistrySolid State ElectrochemistrySolid State Electrochemistry, 2 Volume SetSolid State Electrochemistry and ElectrophysicsElectrochemistry of Porous MaterialsSolid State Electrochemistry: from Science of Nonstoichiometry and Point Defect to Advanced ApplicationsSolid-state Electrochemistry on the Nanometer and Atomic ScalesSolid State Electrochemistry and Its Applications to Sensors and Electronic DevicesRussian Journal of ElectrochemistrySolid State Electrochemistry, 2 Volume Set Peter G. Bruce Abdelkader Hammou P. J. Gellings Kazuhiro Sylvester Goto Vladislav V. Kharton Vladislav V. Kharton Thomas G. Willard P.J. Gellings Central Electrochemical Research Institute (India) Vladislav V. Kharton Vladislav V. Kharton Central Electrochemical Research Institute (India) Antonio Doménech Carbó K.S. Goto Vladislav V. Kharton
Solid State Electrochemistry Solid-State Electrochemistry Handbook of Solid State Electrochemistry Solid State Electrochemistry and Its Applications to Sensors and Electronic Devices Solid State Electrochemistry I Solid State Electrochemistry II Solid State Electrochemistry Handbook of Solid State Electrochemistry Solid State Electrochemistry and Electrophysics Solid State Electrochemistry I Journal of Solid State Electrochemistry Solid State Electrochemistry Solid State Electrochemistry, 2 Volume Set Solid State Electrochemistry and Electrophysics Electrochemistry of Porous Materials Solid State Electrochemistry: from Science of Nonstoichiometry and Point Defect to Advanced Applications Solid-state Electrochemistry on the Nanometer and Atomic Scales Solid State Electrochemistry and Its Applications to Sensors and Electronic Devices Russian Journal of Electrochemistry Solid State Electrochemistry, 2 Volume Set *Peter G. Bruce Abdelkader Hammou P. J. Gellings Kazuhiro Sylvester Goto Vladislav V. Kharton Vladislav V. Kharton Thomas G. Willard P.J. Gellings Central Electrochemical Research Institute (India) Vladislav V. Kharton Vladislav V. Kharton Central Electrochemical Research Institute (India) Antonio Doménech Carbó K.S. Goto Vladislav V. Kharton*

this book describes for the first time in a modern text the fundamental principles on which solid state electrochemistry is based in this sense it is in contrast to other books in the field which concentrate on a description of materials topics include solid ceramic electrolytes glasses polymer

electrolytes intercalation electrodes interfaces and applications the different nature of ionic conductivity in ceramic glassy and polymer electrolytes is described as are the thermodynamics and kinetics of intercalation reactions the interface between solid electrolytes and electrodes is discussed and contrasted with the more conventional liquid state electrochemistry the text provides an essential foundation of understanding for postgraduates or others entering the field for the first time and will also be of value in advanced undergraduate courses

this book features the essential material for any graduate or advanced undergraduate course covering solid state electrochemistry it provides the reader with fundamental course notes and numerous solved exercises making it an invaluable guide and compendium for students of the subject the book places particular emphasis on enhancing the reader s expertise and comprehension of thermodynamics the kröger vink notation the variation in stoichiometry in ionic compounds and of the different types of electrochemical measurements together with their technological applications containing almost 100 illustrations a glossary and a bibliography the book is particularly useful for master and phd students industry engineers university instructors and researchers working with inorganic solids in general

the handbook of solid state electrochemistry is a one stop resource treating the two main areas of solid state electrochemistry electrochemical properties of solids such as oxides halides and cation conductors and electrochemical kinetics and mechanisms of reactions occurring on solid electrolytes including gas phase electrocatalysis the fund

the only comprehensive handbook on this important and rapidly developing topic combines fundamental information with a brief overview of recent advances in solid state electrochemistry primarily targeting specialists working in this scientific field particular attention is focused on the most important developments performed during the last decade methodological and theoretical aspects of solid state electrochemistry as well as practical applications the highly experienced editor has included chapters with critical reviews of theoretical approaches experimental methods and modeling techniques providing definitions and explaining relevant terminology as necessary several other chapters cover all the key groups of the ion conducting solids important for practice namely cationic protonic oxygen anionic and mixed conductors but also conducting polymer and hybrid materials finally the whole is rounded off by brief surveys of advances in the fields of fuel cells solid state batteries electrochemical sensors and other applications of ion conducting solids due to the very interdisciplinary nature of this topic this is of great interest to material scientists polymer chemists physicists and industrial scientists too

the ideal addition to the companion volume on fundamentals methodologies and applications this second volume combines fundamental information with an overview of the role of ceramic membranes electrodes and interfaces in this important interdisciplinary and rapidly developing

field written primarily for specialists working in solid state electrochemistry this first comprehensive handbook on the topic focuses on the most important developments over the last decade as well as the methodological and theoretical aspects and practical applications this makes the contents equally of interest to material physical and industrial scientists and to physicists also available as a two volume set

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electrochemistry of porous materials describes essential theoretical aspects of the electrochemistry of nanostructured materials and primary applications incorporating the advances in the field in the last ten years including recent theoretical formulations and the incorporation of novel materials concentrating on nanostructured micro and mesoporous materials the highly anticipated second edition offers a more focused and practical analysis of key porous materials considered relatively homogeneous from an electrochemical point of view the author details the use of electrochemical methods in materials science for characterization and their applications in the fields of analysis energy production and storage environmental remediation and the biomedical arena additional features include incorporates new theoretical advances in the voltammetry of porous materials and multiphase porous electrochemistry includes new developments in sensing energy production and storage degradation of pollutants desalination and drug release describes redox processes for different porous materials assessing their electrochemical applications written at an accessible and understandable level for researchers and graduate students working in the field of material chemistry selective and streamlined electrochemistry of porous materials second edition culls a wide range of relevant and practically useful material from the extensive literature on the subject making it an invaluable reference for readers of all levels of understanding

energy technologies of the 21st century require an understanding and precise control over ion transport and electrochemistry at all length scales from single atoms to macroscopic devices our short review provides a summary of recent studies dedicated to methods of advanced scanning probe microscopy for probing electrochemical transformations in solids at the meso nano and atomic scales in this discussion we present the advantages and limitations of several techniques and a wealth of examples highlighting peculiarities of nanoscale electrochemistry

it is estimated that about 40 of the annual production of metals is used to repair or replace materials damaged by corrosion corrosion causes waste of the natural material and energy resources it creates serious materials problems for many technologies and adversely affects almost every area of engineering the use of metals in various aggressive environments has resulted in an extremely wide diversity of corrosion problems this book presents a collection of concise reviews written by experts in the field on selected topics of metallic corrosion and on some aspects of interaction of hydrogen with metals a comprehensive range of problems is examined including localized corrosion high temperature corrosion in liquid metals and molten

salts transport control in corrosion processes entry of hydrogen into metals hydrogen embrittlement and hydrogen reactions with metals the variety of topics covered in the book will provide corrosion scientists engineers university lecturers and students alike with an interdisciplinary approach to solving problems of materials degradation and surface processes in metal corrosion

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