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EDITORS

F. Kremer
W. Richtering

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EDITORS**

K. Grudke
M. Stamm
H.-J. Adler

Progress in Colloid and Polymer Science

Characterization of Polymer Surfaces
and Thin Films



Springer

Characterization Of Polymers Surfaces Interfaces Thin Films

Hari Singh Nalwa



Characterization Of Polymers Surfaces Interfaces Thin Films:

Characterization of Polymer Surfaces and Thin Films K. Grundke, M. Stamm, H.-J. Adler, 2006-05-09 This volume includes contributions to the 10th Dresden Polymer Discussion which was held in Meißen near Dresden from April 10 to 13 2005 organized by the Leibniz Institute of Polymer Research Dresden and the Institute of Macromolecular and Textile Chemistry of the Technische Universität Dresden The meeting was focussed on Characterization of Polymer Surfaces and Thin Films Comprehensive characterization of surfaces and interfaces is essential to relate surface and thin film properties to micro structure and molecular origin which is on the other hand the key to technological control and improvement of materials The contributions in this volume cover a representative spectrum of surface sensitive techniques and their application to polymer surface and thin film characterization as well as recent examples of technologically relevant materials and process development

Encyclopedia of Materials Characterization Charles A. Evans, 1992 This is a comprehensive volume on analytical techniques used in materials science for the characterization of surfaces interfaces and thin films This flagship volume is a unique stand alone reference for materials science practitioners process engineers students and anyone with a need to know about the capabilities available in materials analysis An encyclopedia of 50 concise articles this book will also be a practical companion to the forthcoming books in the series Knovel

Polymer Surface Characterization Luigia Sabbatini, 2014-07-28 Polymer Surface Characterization provides a comprehensive approach to the surface analysis of polymers of technological interest by means of modern analytical techniques Basic principles operative conditions applications performance and limiting features are supplied together with current advances in instrumental apparatus Each chapter is devoted to one technique and is self consistent the end of chapter references would allow the reader a quick access to more detailed information After an introductory chapter techniques that can interrogate the very shallow depth of a polymer surface spanning from the top few angstroms in secondary ions mass spectrometry to 2 10 nm in X ray photoelectron spectroscopy are discussed followed by Fourier transform infrared spectroscopy and chapters on characterization by scanning probe microscopy electron microscopies wettability and spectroscopic ellipsometry

Polymer Surfaces and Interfaces Manfred Stamm, 2008-01-26 In what is an extremely practical and applicable new work experts provide concise explanations with examples and illustrations of the key techniques in this important field In each case after basic principles have been reviewed applications of the experimental techniques are discussed and illustrated with specific examples Scientists and engineers in research and development will benefit from an application oriented book that helps them to find solutions to both fundamental and applied problems They will know that the surfaces and interfaces of polymers play an important role in most of the application areas of polymers from moulds foils and composites to biomaterials and applications in micro and nanotechnology

Characterization of Polymers Ned J. Chou, 2010 Polymers are organic often complex molecular compounds used as the building blocks for plastics elastomers and various types of

synthetic engineered materials Polymer scientists and chemists are not always familiar with the characterization methods best used for polymeric materials And knowing what characterization technology works best can make a huge difference in getting an accurate understanding of internal and surface microstructure and ultimately desired properties for the myriads of polymer applications in use today Useful case studies help to better illustrate the common types of problems and challenges when characterizing polymers Review of basic polymer structures and synthesis routes as well as chemical composition Characterization techniques appropriate for morphology of surfaces interfaces and thin films Useful background on polymer surface thermodynamics as well as adhesion properties and polymer polymer interfaces properties and characterization techniques

Advanced Electronic Packaging Richard K. Ulrich, William D. Brown, 2006-02-24 As in the First Edition each chapter in this new Second Edition is authored by one or more acknowledged experts and then carefully edited to ensure a consistent level of quality and approach throughout There are new chapters on passive devices RF and microwave packaging electronic package assembly and cost evaluation and assembly while organic and ceramic substrates are now covered in separate chapters All the hallmarks of the First Edition which became an industry standard and a popular graduate level textbook have been retained An Instructor's Manual presenting detailed solutions to all the problems in the book is available upon request from the Wiley Marketing Department

New Characterization Techniques for Thin Polymer Films Ho-ming Herbert Tong, Luu T. Nguyen, 1990-05-14 Various industries and universities have aimed their activities toward the development of highly sensitive techniques capable of studying ultrathin polymer films Provides researchers with a working description of the principles of operation areas of application and data analysis methods for some of the newly developed techniques as well as sufficient references for future in depth studies of thin polymer films The techniques covered are divided into two groups bulk property measurements and surface interface property measurements with chapters covering microdielectrometry stress measurement by x ray diffraction laser interferometry ion beam analysis photothermal analysis and XPS SIMS AES among other techniques Abstracts for each of the chapters are conveniently located in the preface

Handbook of Surfaces and Interfaces of Materials: Solid thin films and layers Hari Singh Nalwa, 2001

Characterization of Organic Thin Films Abraham Ulman, 1995 Characterization of Organic Thin Films will help materials scientists physicists chemists and biologists develop a fundamental understanding of structure properties relationships which in turn makes possible molecular engineering of advanced materials and opens new opportunities in molecular manufacturing

Molecular-level Structures of Polymer Surfaces and Interfaces Studied by Sum

Frequency Generation Vibrational Spectroscopy Chunyan Chen, 2005

Guide to Programs National Science Foundation (U.S.), 1996

Handbook of Surfaces and Interfaces of Materials: Surface and interface analysis and properties Hari Singh Nalwa, 2001

Surface and Interfacial Aspects of Biomedical Polymers J.D. Andrade, 1985-05-31 This book is intended to provide a fundamental basis for the study of the interaction of polymers with living systems biochemicals and

with aqueous solutions The surface chemistry and physics of polymeric materials is a subject not normally covered to any significant extent in classical surface chemistry textbooks Many of the assumptions of classical surface chemistry are invalid when applied to polymer surfaces Surface properties of polymers are important in the development of medical devices and diagnostic products Surface properties are also of vital importance in fields such as adhesion paints and coatings polymer filler interactions heterogeneous catalysis composites and polymers for energy generation The book begins with a chapter considering the current sources of information on polymer surface chemistry and physics It moves on to consider the question of the dynamics of polymer surfaces and the implications of polymer surface dynamics on all subsequent characterization and interfacial studies Two chapters are directed toward the question of model polymers for preparing model surfaces and interfaces Complete treatments of X ray photoelectron spectroscopy and attenuated total reflection infrared spectroscopy are given There is a detailed treatment of the contact angle with particular emphasis on contact angle hysteresis in aqueous systems followed by chapters on interfacial electrochemistry and interface acid base charge transfer properties The very difficult problem of block and graft copolymer surfaces is also discussed The problem of theoretical calculations of surface and interfacial tensions is presented Raman spectroscopy is considered as an analytical technique for polymer surface characterization

Handbook of Surfaces and Interfaces of Materials: Surface and interface phenomena
Hari Singh Nalwa, 2001 This handbook brings together under a single cover all aspects of the chemistry physics and engineering of surfaces and interfaces of materials currently studied in academic and industrial research It covers different experimental and theoretical aspects of surfaces and interfaces their physical properties and spectroscopic techniques that have been applied to a wide class of inorganic organic polymer and biological materials The diversified technological areas of surface science reflect the explosion of scientific information on surfaces and interfaces of materials and their spectroscopic characterization The large volume of experimental data on chemistry physics and engineering aspects of materials surfaces and interfaces remains scattered in so many different periodicals therefore this handbook compilation is needed The information presented in this multivolume reference draws on two decades of pioneering research on the surfaces and interfaces of materials to offer a complete perspective on the topic These five volumes Surface and Interface Phenomena Surface Characterization and Properties Nanostructures Micelles and Colloids Thin Films and Layers Biointerfaces and Applications provide multidisciplinary review chapters and summarize the current status of the field covering important scientific and technological developments made over past decades in surfaces and interfaces of materials and spectroscopic techniques with contributions from internationally recognized experts from all over the world Fully cross referenced this book has clear precise and wide appeal as an essential reference source long due for the scientific community The complete reference on the topic of surfaces and interfaces of materials The information presented in this multivolume reference draws on two decades of pioneering research Provides multidisciplinary review chapters and summarizes the current status of the

field Covers important scientific and technological developments made over past decades in surfaces and interfaces of materials and spectroscopic techniques Contributions from internationally recognized experts from all over the world

IBM Journal of Research and Development ,1994

Handbook of Surfaces and Interfaces of Materials:

Biomolecules, biointerfaces, and applications Hari Singh Nalwa,2001

Polymer Preprints, Japan ,2008

Characterization of Polymers Ned J. Chou,1994 Emphasizes properties and their technical implications rather than techniques Recommends a technique or a range of techniques to measure a specific property complete with the pros and cons of the techniques and methods of data reduction interpretation wherever pertinent Contains appendices relating to accepted and novel techniques specific to polymer research A practical guide for polymer researchers and technologists who are themselves not specialists in polymer characterization to determine what surface interfacial and micro properties are important to their applications and the techniques most suited to the measurement of such properties Handbook of Surfaces and Interfaces of Materials: Nanostructured materials, micelles and colloids Hari Singh Nalwa,2001 This handbook brings together under a single cover all aspects of the chemistry physics and engineering of surfaces and interfaces of materials currently studied in academic and industrial research It covers different experimental and theoretical aspects of surfaces and interfaces their physical properties and spectroscopic techniques that have been applied to a wide class of inorganic organic polymer and biological materials The diversified technological areas of surface science reflect the explosion of scientific information on surfaces and interfaces of materials and their spectroscopic characterization The large volume of experimental data on chemistry physics and engineering aspects of materials surfaces and interfaces remains scattered in so many different periodicals therefore this handbook compilation is needed The information presented in this multivolume reference draws on two decades of pioneering research on the surfaces and interfaces of materials to offer a complete perspective on the topic These five volumes Surface and Interface Phenomena Surface Characterization and Properties Nanostructures Micelles and Colloids Thin Films and Layers Biointerfaces and Applications provide multidisciplinary review chapters and summarize the current status of the field covering important scientific and technological developments made over past decades in surfaces and interfaces of materials and spectroscopic techniques with contributions from internationally recognized experts from all over the world Fully cross referenced this book has clear precise and wide appeal as an essential reference source long due for the scientific community The complete reference on the topic of surfaces and interfaces of materials The information presented in this multivolume reference draws on two decades of pioneering research Provides multidisciplinary review chapters and summarizes the current status of the field Covers important scientific and technological developments made over past decades in surfaces and interfaces of materials and spectroscopic techniques Contributions from internationally recognized experts from all over the world **Polymer Surfaces, Interfaces And Thin Films** Alamgir Karim,Sanat Kumar,2000-04-19 The theoretical and experimental study of

polymers polymer surfaces and thin films has undergone a revolution in the last 25 years This book captures recent advances in this field It covers equilibrium aspects kinetics and reactions at interfaces It is aimed not only at a research audience but also at beginners

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