

Application Of Ionic Liquids In Organic Synthesis

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Electrochemical Aspects of Ionic Liquids Jun 26 2019 The second edition is based on the original book, which has been revised, updated and expanded in order to cover the latest information on this rapidly growing field. The book begins with a description of general and electrochemical properties of ionic liquids and continues with a discussion of applications in biochemistry, ionic devices, functional design and polymeric ionic liquids. The new edition includes new chapters on Li ion Batteries and Actuators, as well as a revision of existing chapters to include a discussion on purification and the effects of impurities, adsorption of ionic liquids on interfaces and on the electrochemical double layer, among other topics.

Ionic Liquids Completely UnCOILed Aug 28 2019 Critical overviews from the front line of ionic liquids research *Ionic Liquids Completely UnCOILed: Critical Expert Overviews* concludes the discussion of new processes and developments in ionic liquid technology introduced in the previously published volumes, *Ionic Liquids UnCOILed* and *Ionic Liquids Further UnCOILed*. The goal of this volume is to provide expert overviews that range from applied to theoretical, synthetic to structural, and analytical to toxicological. The value of book lies in the authors'

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expertise, and their willingness to share it with the reader. Written by an international group of chemists, the book presents eleven overviews of specific areas of ionic liquid chemistry including: What is an Ionic Liquid? Molecular modelling Crystallography Chemical engineering of ionic liquid processes Toxicology and Biodegradation Organic reaction mechanisms Edited by Professor Ken Seddon and Dr Natalia Plechkova, world leaders in the field of ionic liquids, this book is a must read for R&D chemists, educators, and students, and for commercial developers of environmentally sustainable processes. It offers insight and appreciation for the direction in which the field is going, while also highlighting the best published works available, making it equally valuable to new and experienced chemists alike.

Ionic Liquids in the Biorefinery Concept Oct 23 2021 The implementation of ionic liquids technologies in future biorefineries is challenging. Different approaches can be applied along the entire chain of biomass valorisation to achieve a specific target molecule, from biomass pre-treatment and fractionation processes to extraction, downstream separation and purification methodologies of high value added products and pivot chemicals. This book summarises recent achievements in the use of ionic liquids in biomass processing as an alternative to conventional processes, particularly in the context of green chemistry. It features real-world case studies where high value-added products have been obtained using ionic liquid processing, demonstrating the practical applications of these technologies. The book concludes by assessing the development of further biorefineries with ionic liquids. The book is an important reference for researchers and practising chemists, bringing readers up-to-date with current research in this field.

Application of Ionic Liquids in Drug Delivery Jun 18 2021 This book presents recent advances in the use of ionic liquids in medicine and pharmaceuticals with particular emphasis on addressing critical pharmaceutical challenges, including the low

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solubility, polymorphism, and bioavailability of drugs. It also provides insights into the development of the biologically functionalized ionic liquids suitable for medical and pharmaceutical applications. Ionic liquids have been used as potential solvents or materials in the fields of pharmaceutical drug delivery and formulations because of their unique and tunable physicochemical and biological properties. Readers find explanations of the diverse approaches to the application of ionic liquids in drug solubility, active pharmaceutical ingredient (API) formulation, and drug delivery systems, such as topical, transdermal, and oral delivery, with particular emphasis on recent developments. Particular attention is given to the development of ionic liquid-assisted effective drug delivery techniques for sparingly soluble or insoluble drug molecules. This book also discusses the biological activities of ionic liquids for possible applications in drug formulation and drug delivery systems. Scientists in disciplines such as chemistry, biology, and pharmaceuticals find this book instructive and informative for developing ionic liquid-based drug formulations or drug delivery systems.

Ionic Liquids in Flow Assurance Dec 01 2019 This book focuses on the application of ionic liquids in flow assurance in the oil and gas industry. It discusses their physiochemical properties, and considers the role of ionic liquids as gas hydrate inhibitors in offshore pipelines. Gas hydrate occurrence can pose a major threat to pipeline integrity. Therefore, different categories of gas hydrate inhibitors and the main factors influencing ionic liquids during gas hydrate inhibition are examined thoroughly. The use of ionic liquids as corrosion inhibitors, their application in flow assurance industry to mitigate corrosion, and factors affecting their performance are discussed. Finally, the applications of ionic liquids in wax, scale and asphaltene deposition control is explored. The extensive discussion of ionic liquids in flow assurance mean that this book will be of use to researchers,

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engineers, and industry professionals in upstream processing of the oil and gas sector.

Application, Purification, and Recovery of Ionic Liquids Jan 14 2021 *Application, Purification, and Recovery of Ionic Liquids* provides a comprehensive overview of the usage of ionic liquids (IL). The book gives a description of the methods used for recovery and purification of ILs, a summary of the economic aspects of using ILs, and a review on the toxicity data of ILs. It is written for researchers, scientists, and engineers working with ILs, their properties, and usages. The book not only describes the chemical aspects, but the economic and environmental aspects as well, making it of particular interest to professionals applying this technology. Chapters written by scientists in academia and researchers in industry, ensuring coverage of both the scientific fundamentals and industrial applications A single source of information for a broad collection of recovery and purification methods Provides information on using ionic liquids as green solvents Includes economic aspects of recovery and reuse of ionic liquids

Supported Ionic Liquids Sep 21 2021 This unique book gives a timely overview about the fundamentals and applications of supported ionic liquids in modern organic synthesis. It introduces the concept and synthesis of SILP materials and presents important applications in the field of catalysis (e.g. hydroformylation, hydrogenation, coupling reactions, fine chemical synthesis) as well as energy technology and gas separation. Written by pioneers in the field, this book is an invaluable reference book for organic chemists in academia or industry.

The Structure of Ionic Liquids Apr 16 2021 This volume describes the most recent findings on the structure of ILs interpreted through cutting-edge experimental and theoretical methods. Research in the field of ionic liquids (ILs) keeps a fast and steady pace. Since these new-generation molten salts first appeared in

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the chemistry and physics landscape, a large number of new compounds has been synthesized. Most of them display unexpected behaviour and possess stunning properties. The coverage in this book ranges from the mesoscopic structure of ILs to their interaction with proteins. The reader will learn how diffraction techniques (small and large angle X-Ray and neutron scattering, powder methods), X-Ray absorption spectroscopies (EXAFS/XANES), optical methods (IR, RAMAN), NMR and calorimetric methods can help the study of ILs, both as neat liquids and in mixtures with other compounds. It will enable the reader to choose the best method to suit their experimental needs. A detailed survey of theoretical methods, both quantum-chemical and classical, and of their predictive power will accompany the exposition of experimental ones. This book is a must read for postgraduate students, for post-docs, and for researchers who are interested in understanding the structural properties of ILs.

Ionic Liquids Aug 21 2021 Ionic liquids, including the newer subcategory of deep eutectic solvents, continue to attract a great deal of research attention in an even increasing number of areas, including traditional areas such as synthesis (organic and materials), electrochemistry, and physical property studies and predictions, as well as less obvious areas such as lubrication and enzymatic transformations. In this volume, recent advances in a number of these different areas are reported and reviewed, thus granting some appreciation for the future that ionic liquid research holds and affording inspiration for those who have not previously considered the application of ionic liquids in their area of interest.

An Introduction to Ionic Liquids Feb 01 2020 In the late 1990s, there was an explosion of research on ionic liquids and they are now a major topic of academic and industrial interest with numerous existing and potential applications. Since then, the number of scientific papers focusing on ionic liquids has risen

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exponentially, including a few edited multi-author books covering the latest advances in ionic liquids chemistry and several volumes of symposium proceedings. Much of the content in these books and volumes is written using technical jargon that only scientists at the cutting edge of ionic liquids research will understand and ionic liquids are hardly covered in most modern chemistry textbooks. This is the first single-author book on ionic liquids and the first introductory book on the topic. It is written in a clear, concise and consistent way. The book provides a useful introduction to ionic liquids for those readers who are not familiar with the topic. It is also wide ranging, embracing every aspect of the chemistry and applications of ionic liquids. The book draws extensively on the primary scientific literature to provide numerous examples of research on ionic liquids. These examples will enable the reader to become familiar with the key developments in ionic liquids chemistry over recent years. The book provides an introduction to: ionic liquids; their nomenclature; history; physical, chemical and biological properties; and their wide ranging uses and potential applications in catalysis, electrochemistry, inorganic chemistry, organic chemistry, analysis, biotechnology, green chemistry and clean technology. Notable and important chapters include "The Green Credentials of Ionic Liquids" and "Biotechnology." The chapter on "Applications" includes sections with brief descriptions of recent research on the development of ionic liquids: - for the construction of a liquid mirror for a moon telescope - for use as rocket propellants - for use as antimicrobial agents that combat MRSA - as active pharmaceutical ingredients and antiviral drugs - for embalming and tissue preservation Science students, researchers, teachers in academic institutions and chemists and other scientists in industry and government laboratories will find the book an invaluable introduction to one of the most rapidly advancing and exciting fields of science and technology today.

Fundamentals of Ionic Liquids Nov 04 2022 Written by experts

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who have been part of this field since its beginnings in both research and academia, this textbook introduces readers to this evolving topic and the broad range of applications that are being explored. The book begins by examining what it is that defines ionic liquids and what sets them apart from other materials. Chapters describe the various types of ionic liquids and the different techniques used to synthesize them, as well as their properties and some of the methods used in their measurement. Further chapters delve into synthetic and electrochemical applications and their broad use as "Green" solvents. Final chapters examine important applications in a wide variety of contexts, including such devices as solar cells and batteries, electrochemistry, and biotechnology. The result is a must-have resource for any researcher beginning to work in this growing field, including senior undergraduates and postgraduates.

Polymerized Ionic Liquids Feb 24 2022 The applications of ionic liquids can be enormously expanded by arranging the organic ions in the form a polymer architecture. Polymerized ionic liquids (PILs), also known as poly(ionic liquid)s or polymeric ionic liquids, provide almost all features of ionic polymers plus a rare versatility in design. Written by leading authors, the present book provides a comprehensive overview of this exciting area, discussing various aspects of PILs and their applications as smart materials. The book will appeal to a broad readership including students and researchers from materials science, polymer science, chemistry, and physics.

Electrodeposition from Ionic Liquids Oct 30 2019 Edited by distinguished experts in this expanding field and with specialist contributions, this overview is the first of its kind to focus on electrodeposition from ionic liquids. This second edition has been completely revised and updated with approximately 20% new content and has been expanded by five chapters to cover the following topics: -Bulk and Interface Theory -Nanoscale Imaging including AFM, In situ STM and UHV-STM -Impedance

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Spectroscopy -Process Scale-up including Brighteners -Speciation and Redox Properties. The result is essential reading for electrochemists, materials scientists, chemists in industry, physical chemists, chemical engineers, inorganic and organic chemists.

Green Solvents Sep 09 2020 The shift towards being as environmentally-friendly as possible has resulted in the need for this important volume on the role of ionic liquids in green chemistry. Edited by Peter Wasserscheid, one of the pioneers of ionic liquid research, and Annegret Stark, this is an essential resource for anyone wishing to gain an understanding of the world of green chemistry, as well as for chemists, environmental agencies and chemical engineers.

Applications of Ionic Liquids in Science and Technology Feb 12 2021 This volume, of a two volume set on ionic liquids, focuses on the applications of ionic liquids in a growing range of areas. Throughout the 1990s, it seemed that most of the attention in the area of ionic liquids applications was directed toward their use as solvents for organic and transition-metal-catalyzed reactions. Certainly, this interest continues on to the present date, but the most innovative uses of ionic liquids span a much more diverse field than just synthesis. Some of the main topics of coverage include the application of RTILs in various electronic applications (batteries, capacitors, and light-emitting materials), polymers (synthesis and functionalization), nanomaterials (synthesis and stabilization), and separations. More unusual applications can be noted in the fields of biomass utilization, spectroscopy, optics, lubricants, fuels, and refrigerants. It is hoped that the diversity of this volume will serve as an inspiration for even further advances in the use of RTILs.

Electrochemistry in Ionic Liquids Dec 25 2021 This set of two books dedicated to presenting the latest novel and advanced research from around the world in this exciting area. These books highlight the important properties of electrochemistry in ionic

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liquids - as opposed to the more commonly used aqueous and organic environments - and the many applications. Readers will find 20 chapters gathered in two books: The first volume critically discusses electrode-electrolyte interfacial processes, reference electrodes, ultramicroelectrode voltammetry and scanning electrochemical microscopy, semi-integral and convolution voltammetry, and small-angle X-ray scattering coupled with voltammetry. The structure and properties of protic ionic liquids, deep-eutectic solvents, task-specific ionic liquids, polymeric ion gels, and lithium-ion solvation, useful for electrochemical application is also critically discussed. The second volume's major topics covered in this book include electrodeposition and electroless deposition, voltammetry of adhered microparticles, electrochemistry of organic and organometallic compounds, electrocatalytic reactions, oxygen reduction reaction, ionic liquids in surface protection and lubrication, current industrial application of ionic liquids, and challenges, issues and recycling methods of ionic liquids in industrial developments.

Ionic Liquid Devices Jul 28 2019 Ionic liquids are attractive because they offer versatility in the design of organic salts. As ion-rich media, ionic liquids can control the systems properties by tuning the size, charge, and shape of the composing ions. Whilst the focus has mainly been on the potential applications of ionic liquids as solvents, they also provide innovative opportunities for designing new systems and devices. Limitations from the high viscosity and expensive purification of the ionic liquids are also not a barrier for applications as devices. Written by leading authors, *Ionic Liquid Devices* introduces the innovative applications of ionic liquids. Whilst the first chapters focus on their characterization, which can be difficult in some instances, the rest of the book demonstrates how ionic liquids can play substantial roles in quite different systems from sensors and actuators to biomedical applications. The book provides a comprehensive resource aimed at researchers and students in

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materials science, polymer science, chemistry and physics interested in the materials and inspire the discovery of new applications of ionic liquids in smart devices.

Ionic Liquids Oct 03 2022 This comprehensive database on physical properties of pure ionic liquids (ILs) contains data collected from 269 peer-reviewed papers in the period from 1982 to June 2008. There are more than 9,400 data points on the 29 kinds of physicochemical properties for 1886 available ionic liquids, from which 807 kinds of cations and 185 kinds of anions were extracted. This book includes nearly all known pure ILs and their known physicochemical properties through June 2008. In addition, the authors incorporate the main applications of individual ILs and a large number of references. Nearly 50 tables include typical data, experimental and modelling or simulation comparison, and model parameters, enhancing the application of ILs 100 figures--from QSPR, EOS and gE models to quantum and molecular simulations--help readers understand ILs at molecular level Applications illustrate the role of IL properties in industry, in particular the development of novel clean processes and products

Ionic Liquids further UnCOILed Mar 04 2020 Critical overviews from the front line of ionic liquids research *Ionic Liquids Further UnCOILed: Critical Expert Overviews* continues the discussion of new processes and developments in ionic liquid technology introduced in the first volume. Written by an international group of key academic and industrial chemists, this next book in the series includes eleven overviews of specific areas of ionic liquid chemistry including: Physicochemical properties of ionic liquids A patent survey Ionic liquid membrane technology Engineering simulations Molecular simulations The goal of this volume is to provide expert overviews that range from applied to theoretical, synthetic to analytical, and biotechnological to electrochemical, while also offering consistent abbreviations of ionic liquids throughout the text. The value of *Ionic Liquids Further*

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UnCOILed: Critical ExpertOverviews lies in the authors' expertise and theirwillingness to share it with the reader. Included in the book isinsight into typical problems related to experimental techniques,selection of liquids, and variability of data—all of whichwere overseen by Professor Ken Seddon, one of the book'seditors and a world leader in ionic liquids. This book is a mustread for R&D chemists in industrial, governmental, and academiclaboratories, and for commercial developers of environmentallysustainable processes. It offers insight and appreciation for thedirection in which the field is going, while also highlighting thebest published works available, making it equally valuable to newand experienced chemists alike.

Ionic Liquids in Chemical Analysis Oct 11 2020 An Overview of a Rapidly Expanding Area in Chemistry Exploring the future in chemical analysis research, Ionic Liquids in Chemical Analysis focuses on materials that promise entirely new ways to perform solution chemistry. It provides a broad overview of the applications of ionic liquids in various areas of analytical chemistry, in

Electrodeposition from Ionic Liquids Jan 02 2020 Reflecting the dramatic rise in interest shown in this field over the last few years, this book collates the widespread knowledge into one handy volume. It covers in depth all classes of ionic liquids thus far in existence, with the individual chapters written by internationally recognized experts. The text is written to suit several levels of difficulty, containing information on basic physical chemistry in ionic liquids, a theory on the conductivity as well as plating protocols suited to undergraduate courses. The whole is rounded off with an appendix providing experimental procedures to enable readers to experiment with ionic liquids for themselves.

Ionic Liquid Devices Nov 23 2021 Ionic liquids are attractive because they offer versatility in the design of organic salts. As ion-rich media, ionic liquids can control the systems properties by

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tuning the size, charge, and shape of the composing ions. Whilst the focus has mainly been on the potential applications of ionic liquids as solvents, they also provide innovative opportunities for designing new systems and devices. Limitations from the high viscosity and expensive purification of the ionic liquids are also not a barrier for applications as devices. Written by leading authors, *Ionic Liquid Devices* introduces the innovative applications of ionic liquids. Whilst the first chapters focus on their characterization, which can be difficult in some instances, the rest of the book demonstrates how ionic liquids can play substantial roles in quite different systems from sensors and actuators to biomedical applications. The book provides a comprehensive resource aimed at researchers and students in materials science, polymer science, chemistry and physics interested in the materials and inspire the discovery of new applications of ionic liquids in smart devices.

Ionic Liquids in Microemulsions Apr 04 2020 Ionic liquids (ILs), which are defined as salts with a melting point below 100 C are often considered as future solvents for catalysis, chemical reactions, extractions and electrochemical purposes. Apart from these classical applications, they have also gained interest in classical colloid and surface chemistry. The formation of amphiphilic association structures in and with ionic liquids, such as micelles, vesicles, microemulsions and liquid crystalline phases have been reported in literature. All studies concerning ILs in microemulsions described in literature have been performed below the boiling point of water. In the present work, we were interested in microemulsions that are stable over a wide temperature range at ambient pressure. For this purpose, water must be replaced by a room temperature ionic liquid (RTIL). The thesis can be subdivided into three main parts: Conductivity studies of the anion effect on imidazolium based ionic liquids over a wide temperature range (-25-195) C, formulation and characterization of nonaqueous, high temperature stable

microemulsions with RTILs as polar phase and the synthesis and characterization of new ionic liquids based on alkali cations."

Ionic Liquids May 06 2020 Room temperature ionic liquids (RTILs) are an interesting and valuable family of compounds. Although they are all salts, their components can vary considerably, including imidazolium, pyridinium, ammonium, phosphonium, thiazolium, and triazolium cations. In general, these cations have been combined with weakly coordinating anions. Common examples include tetrafluoroborate, hexafluorophosphate, triflate, triflimide, and dicyanimide. The list of possible anionic components continues to grow at a rapid rate. Besides exploring new anionic and cation components, another active and important area of research is the determination and prediction of their physical properties, particularly since their unusual and tunable properties are so often mentioned as being one of the key advantages of RTILs over conventional solvents. Despite impressive progress, much work remains before the true power of RTILs as designer solvents (i.e. predictable selection of a particular RTIL for any given application) can be effectively harnessed.

Ionic Liquid-Based Technologies for Environmental Sustainability

Aug 01 2022 Ionic Liquid-based Technologies for Environmental Sustainability explores the range of sustainable and green applications of IL materials achieved in recent years, such as gas solubility, biomass pre-treatment, bio-catalysis, energy storage, gas separation and purification technologies. The book also provides a reference material for future research in IL-based technologies for environmental and energy applications, which are much in-demand due to sustainable, reusable and eco-friendly methods for highly innovative and applied materials. Written by eminent scholars and leading experts from around the world, the book aims to cover the synthesis and characterization of broad range of ionic liquids and their sustainable applications. Chapters provide cutting-edge research with state-of-the-art developments,

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including the use of IL-based materials for the removal of pharmaceuticals, dyes and value-added metals. Describes the fundamentals and major applications of ionic liquid materials
Covers up-to-date developments in novel applications of IL materials
Provides practical tips to aid researchers who work on ionic liquid applications

Metal Catalysed Reactions in Ionic Liquids Sep 29 2019
Metal Catalysed Reactions in Ionic Liquids is the first non-edited book on the subject of metal catalyzed reactions in ionic liquids to cover the literature from its origins until early 2005. Following a general introduction to the field of biphasic/multiphasic catalysis, the book moves on to describe the synthesis, the functionalisation, and fundamental properties of ionic liquids relevant to catalysis. It then analyses the catalysed reactions according to their type, encompassing hydrogenation, hydroformylation, oxidation, C-C coupling reactions, metathesis, dimerisation, polymerisation and more. Trends, generalisations, advantages and disadvantages of ionic liquids for specific reaction types are also examined as well as specific processes such as supported ionic liquid phase catalysis, continuous processes using CO₂ extraction and nanoparticle catalysis. Metal Catalysed Reactions in Ionic Liquids is of interest to those working in catalysis/green chemistry, in particular to advanced level undergraduate and graduate students and researchers in bi- or multiphasic catalysis using ionic liquids.

Ionic Liquid Properties Mar 28 2022
This volume deals with substances in the liquid state that range from high melting salts, such as calcium fluoride, through slags, such as silicates, down to lower melting salts, such as lithium nitrate, molten hydrated salts, such as magnesium chloride hexahydrate, to room temperature ionic liquids, such as 1,3-dimethylimidazolium tetraphenylborate. It provides the reader with annotated, critically examined, and compiled data for such materials. The data includes a variety of thermochemical, structural, and

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transport properties. The book includes correlations of measured properties; these correlations should enable the reader to estimate, on a sound basis, properties for ionic liquids that have not yet been measured.

Green Solvents, Volume 6 Aug 09 2020 The shift towards being as environmentally-friendly as possible has resulted in the need for this important volume on the role of ionic liquids in green chemistry. Edited by Peter Wasserscheid, one of the pioneers of ionic liquid research, and Annegret Stark, this is an essential resource for anyone wishing to gain an understanding of the world of green chemistry, as well as for chemists, environmental agencies and chemical engineers.

Ionic Liquids in Lipid Processing and Analysis Jan 26 2022 This book serves as a reference for those interested in state-of-the-art research on the science and technology of ionic liquids (ILs), particularly in relation to lipids processing and analysis. Topics include a review of the chemistry and physics of ILs as well as a quantitative understanding of structure-activity relationships at the molecular level. Further, chapter authors examine the molecular basis of the toxicity of ILs, the prediction of the properties of ILs, and the rationale and steps toward a priori design of ionic liquids for task-defined applications. Emerging research in developing lipid-inspired ILs and their prospective use in drug formulation is described. Among the highlights are the latest advances in IL-mediated biocatalysis and biotransformation, along with lipase production, purification, and activation. Reviews the state-of-the-art applications of ionic liquids in lipid processing and relevant areas from a variety of perspectives Summarizes the latest advances in the measurement of the physical and chemical properties of ionic liquids and available databases of thermodynamic property datapoints Presents the tremendous opportunities provided and challenges faced from ionic liquids as a newly emerging technology for lipids processing area

Ionic Liquids in Separation Technology Jun 30 2022 *Ionic Liquids in Separation Technology* reports on the most important fundamental and technological advances in separation processes using ionic liquids. It brings together the latest developments in this fascinating field, supplements them with numerous practical tips, and thus provides those working in both research and industry with an indispensable source of information. The book covers fundamental topics of physical, thermal, and optical properties of ionic liquids, including green aspects. It then moves on to contexts and applications, including separation of proteins, reduction of environmental pollutants, separation of metal ions and organic compounds, use in electrochromic devices, and much more. For the specialist audience the book serves as a recompilation of the most important knowledge in this field, whereas for starting researchers in ionic liquid separation technology the book is a great introduction to the field. First book in the marketplace dedicated to ionic liquids in separation technology Contributions from scientists in academia and researchers in industry ensure the coverage of both scientific fundamentals and industrial applications Covers a broad collection of applications in separation technology which makes the book a single source of information Includes many practical tips for researchers in industry and scientists who apply ionic liquids in their work

Applications of Ionic Liquids in Polymer Science and Technology

Jul 20 2021 This book summarizes the latest knowledge in the science and technology of ionic liquids and polymers in different areas. Ionic liquids (IL) are actively being investigated in polymer science and technology for a number of different applications. In the first part of the book the authors present the particular properties of ionic liquids as speciality solvents. The state-of-the-art in the use of ionic liquids in polymer synthesis and modification reactions including polymer recycling is outlined. The second part focuses on the use of ionic liquids as speciality

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additives such as plasticizers or antistatic agents. The third part examines the use of ionic liquids in the design of functional polymers (usually called polymeric ionic liquids (PIL) or poly(ionic liquids)). Many important applications in diverse scientific and industrial areas rely on these polymers, like polymer electrolytes in electrochemical devices, building blocks in materials science, nanocomposites, gas membranes, innovative anion sensitive materials, smart surfaces, and a countless set range of emerging applications in different fields such as energy, optoelectronics, analytical chemistry, biotechnology, nanomedicine or catalysis.

Green Industrial Applications of Ionic Liquids Mar 16 2021

This book contains the lecture notes for the NATO Advanced Research Workshop on th Green Industrial Applications of Ionic Liquids held April 12th_16 , 2000 in Heraklion, Crete, Greece.

This was the first international meeting devoted to research in the area of ionic liquids (salts with melting points below 100 Oc), and was intended to explore the promise of ionic liquids as well as to set a research agenda for the field. It was the first international meeting dedicated to the study and application of ionic liquids as solvents, and forty-one scientists and engineers from academia, industry, and government research laboratories (as well as six industry observers and four student assistants) met to discuss the current and future status of the application of ionic liquids to new green industrial technologies. It was immediately clear that the number of organic chemists and engineers working in the field needed to be increased. It was also clear that the declining interest in high temperature molten salts and subsequent increase in low melting ionic liquid solvents had not yet taken hold in Eastern Europe. Participants from NATO Partner Countries contributed significant expertise in high temperature molten salts and were able to take back a new awareness and interest in ionic liquid solvents.

Environmentally Friendly Syntheses Using Ionic Liquids Dec 13 2020

Increased environmental consciousness within the

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scientific community has spurred the search for environmentally friendly processes as alternatives to conventional organic solvents. In the past two decades, numerous advances—including the use of ionic liquids—have made it possible to develop substitutes for some toxic solvents. Ionic liquids are widely recognized as suitable for use in organic reactions and can also improve the control of product distribution, enhanced reactivity, ease of product recovery, catalyst immobilization, and recycling. *Environmentally Friendly Syntheses Using Ionic Liquids* presents the latest developments in the field. It also reviews the latest applications in a wide range of fields including biotechnology, nuclear science, medicine, pharmaceuticals, environmental science, and organic and inorganic chemistry—all from the standpoint of green sustainable chemistry. Growing interest in the field of ionic liquids will define newer and unexplored areas of applications, expanding possible use of these environmentally friendly chemicals. The information presented in this book will undoubtedly help motivate readers to further explore the field.

Ionic Liquids in Synthesis Jun 06 2020 "The second, completely revised and enlarged edition of what has become the standard reference work in this fascinating field brings together the latest developments, supplemented by numerous practical tips, providing those working in both research and industry with an indispensable source of information. New contributions have been added, to reflect the fact that industrial processes are already established, and ionic liquids are now commercially available. A must for everyone working in the field."--Publisher's description.

Ionic Liquids Jul 08 2020 Because of their unique properties and fascinating features, ionic liquids have numerous potential applications in engineering, analytics, physical chemistry, electrochemistry, tribology, and biology. This book discusses the thermophysical properties and other features of these emerging liquids. It also presents different methods of their production, as well as examines their potential use as new lubricants or

lubricant additives and in gas chromatography. In addition, the book provides an archeological, historical, and technological background of alkali and alkali-earth salts and hydroxides. The book is a useful resource for students, researchers, engineers, manufacturers, academicians, and professionals working in the field of ionic liquids for real-world applications.

Ionic Liquids May 30 2022 See Table of Contents (PMP)

Ionic Liquids UnCOILed May 18 2021 *Ionic Liquids UnCOILed* presents decisively important reviews on new processes and recent developments in ionic liquid technology with an emphasis on commercial applications in which ionic liquids are replacing, or may replace, processes currently using conventional solvents. Ranging from applied to theoretical, synthetic to analytical, and biotechnological to electrochemical, the book features eleven chapters written by an international group of key academic and industrial chemists, exercising the judicious evaluation which they are uniquely qualified to do. This book is a must for R&D chemists in industrial, governmental and academic laboratories, and for commercial developers of environmentally-friendly, sustainable processes.

Ionic Liquids Nov 11 2020 Concerns with ionic liquids are one of the most interesting and rapidly developing areas in modern physical chemistry, materials science, technologies, and engineering. Increasing attention has also been paid to the use of ionic liquids in the research fields of biological aspects and natural resources. This book provides the forum for dissemination and exchange of up-to-date scientific information on theoretical, generic, and applied areas of ionic liquids. It, therefore, tends to review recent progresses in ionic liquid research on fundamental properties, solvents and catalysts in organic reactions, biological applications, providing energies and fuels, biomass conversions, functional materials, and other applications. I trust that this book will provide an active source of information for research in ionic liquid science and engineering.

Commercial Applications of Ionic Liquids Apr 28 2022 This book provides an overview of the current and emerging industrial applications of ionic liquids, covering the core processes, the practical implementation and technical challenges involved, and exploring potential future directions for research and development. The introductory chapter describes the unique physical and chemical properties of ionic liquids, and illustrates the vast potential for application of these materials across the industrial landscape. Following this, individual chapters written by leading figures from industry and academia address specific processes and products, such as the development of a new chloroaluminate ionic liquid as an alkylation catalyst and a new class of capillary gas chromatography (GC) columns with stationary phases based on ionic liquids. Over the past twenty years, ionic liquids have moved from being considered as mere academic curiosities to having genuine applications in fields as wide-ranging as biotechnology, biorefineries, catalysis, pharmaceuticals, renewable fuels, and sustainable energy. This book highlights several commercial products and processes that use or will soon be using ionic liquids.

[Ionic Liquids in Synthesis](#) Sep 02 2022 The second, completely revised and enlarged edition of what has become the standard reference work in this fascinating field brings together the latest developments, supplemented by numerous practical tips, providing those working in both research and industry with an indispensable source of information. New contributions have been added, to reflect the fact that industrial processes are already established, and ionic liquids are now commercially available. A must for everyone working in the field.