

Puri Sharma Pathania Physical Chemistry

University Science Books

Principles of physical chemistry

The ion-exchange process is a natural phenomenon and mankind has been using this technique since the early days of civilisation. With the progress of technologies and concepts, we got a better understanding of this technique and increased its application horizon. Like in other research areas, nanotechnology has also penetrated heavily into this field, and has helped develop smart materials with better properties for application in adsorption and ion-exchange chromatography. A large amount of research was carried out in this field in the last few decades, showing the importance of these materials and technologies. Water treatment is receiving great attention worldwide, due to the increasing demand of drinking water and hence the need to recycle polluted water sources. Keeping this importance in mind, this book "Applications of Adsorption and Ion Exchange Chromatography in Waste Water Treatment" has been edited with contributions from well know experts in the field, who have been working on different ion-exchange materials and technologies for many years.

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This book is primarily intended for the first year B.Tech students of all branches for their course on engineering chemistry. The main objective of this book is to provide a broad understanding of the chemical concepts, theories and principles of Engineering Chemistry in a clear and concise manner, so that even an average student can grasp the intricacies of the subject. It includes the general concepts of structure and bonding, phase rule, solid state, reaction kinetics and catalysis, electrochemistry, chemical thermodynamics and free energy. Besides, the book introduces topics of applied chemistry like water technology, polymer chemistry and nanotechnology. Each theoretical concept is well supported by illustrative examples. The book also provides a large number of solved problems and illustrations to reinforce the theoretical understanding of concepts. KEY FEATURES (i) Each chapter of the book provides a clear and easy understanding of the definitions, theories and principles. (ii) A large number of well-labelled diagrams help to understand the concepts easily and clearly. (iii) Chapter-wise glossary and important mathematical relations are given for quick revision. (iv) Provides multiple choice questions with answers, short questions and long questions for practice.

A directory to the universities of the Commonwealth and the handbook of their association.

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This comprehensive textbook, now in its second edition, is mainly written as per the latest syllabi of physical chemistry of all the leading universities of India as well as the new syllabus recommended by the UGC. This thoroughly revised and updated edition covers the principal areas of physical chemistry, such as thermodynamics, quantum chemistry, molecular spectroscopy, chemical kinetics, electrochemistry and nanotechnology. In a methodical and accessible style, the book discusses classical, irreversible and statistical thermodynamics and statistical mechanics, and describes macroscopic chemical systems, steady states and thermodynamics at a molecular level. It elaborates the underlying principles of quantum mechanics, molecular spectroscopy, X-ray crystallography and solid state chemistry along with their applications. The book explains various instrumentation techniques such as potentiometry, polarography, voltammetry, conductometry and coulometry. It also describes kinetics, rate laws and chemical processes at the electrodes. In addition, the text deals with chemistry of corrosion and nanomaterials. This text is primarily designed for the undergraduate and postgraduate students of chemistry (B.Sc. and M.Sc.) for their course in physical chemistry. Key Features • Gives a thorough treatment to ensure a solid grasp of the material. • Presents a large number of figures and diagrams that help amplify key concepts. • Contains several worked-out examples for better understanding of the subject matter. • Provides numerous chapter-end exercises to foster conceptual understanding.

This book is written strictly for the first and second semester diploma students of engineering chemistry according to the revised syllabus. It aims to provide a thorough understanding of the chemical concepts, theories and principles in Engineering Chemistry in a clear and concise manner, so that the average students are able to grasp the intricacies of the subject. Explaining general concepts of atomic structure and chemical bond, the book covers all advanced topics such as acid–base theory, concentration of solutions, electrochemistry, corrosion, metallurgy, hydrocarbons, sources of water and its treatment, lubricants and adhesives, fuel, polymer and environmental chemistry. Each theoretical concept is well supported by illustrative examples. Besides, the book provides a large number of solved problems to reinforce the theoretical understanding of concepts. Each chapter contains glossary terms and provides short questions and long questions for practice. Previous year question papers and model questions with answers are appended at the end of the book to help students ace in examinations.

Special topic volume with invited peer reviewed papers only.

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A fresh and innovative technology is currently being recognized as a viable replacement for batteries. Research in the field of supercapacitors, as well as in the area of ceramic materials and their application to supercapacitor development, has spawned Nanostructured Ceramic Oxides for Supercapacitor Applications. Featuring key contributions from well-established experts, this book highlights the field of high-energy and power storage devices, and considers the potential of nanostructured ceramic oxides for supercapacitors. It explores the role of different ceramic oxide systems and their surface nano-architecture in governing the efficacy of a supercapacitor, and presents a detailed understanding of the basic design and science associated with nanostructured ceramic oxide-based supercapacitors. It examines the history and development of this promising energy system, covering the fundamentals, science, and problems associated with this swiftly emerging field. The book also looks extensively into different measurement techniques that can evaluate the performance of this device. Presents an overview of a given field with examples chosen primarily for their educational purpose Provides exhaustive references at the end of each chapter Fits the background of various science and engineering disciplines Contains detailed mathematical analyses Each chapter includes several simple, well-illustrated equations and schematic diagrams to augment the research topics and help the reader grasp the subject. Background theories and techniques are introduced early on, leading to the evolution of the field of nanostructured

ceramic oxide—based supercapacitors. Nanostructured Ceramic Oxides for Supercapacitor Applications chronicles significant strides in device development, and benefits seniors and graduate students studying physics, electrical and computer engineering, chemistry, mechanical engineering, materials science, and nanotechnology.

The book, name Physical Chemistry has been written for the students of B.Sc. at different Universities of India, is mainly for examination oriented text book for those, who wants to achieve good concept and good results in their academic examinations, which makes capable to enroll into the Postgraduation courses also

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