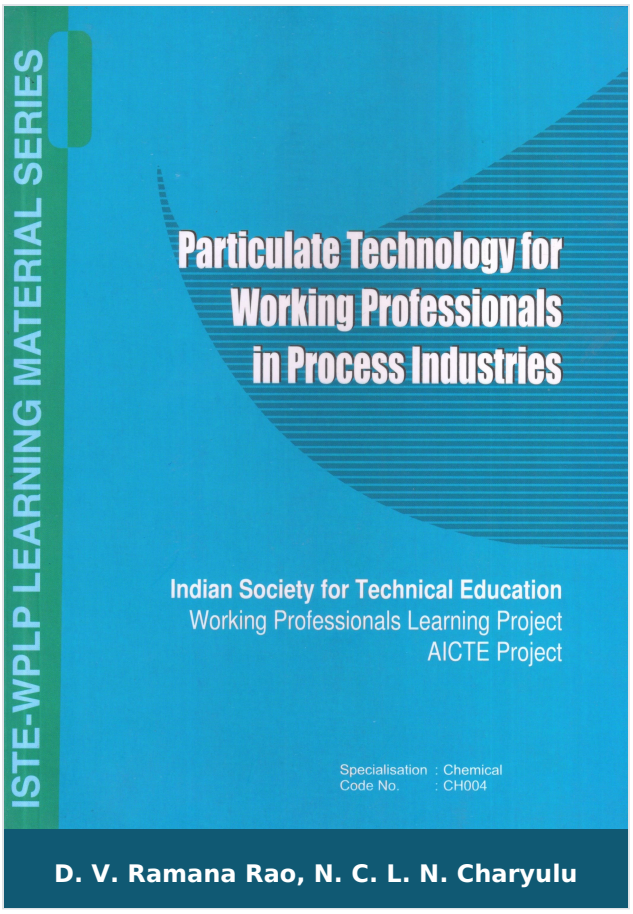


Particulate Technology for Working Professionals in Process Industries

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Product Description

Particulate Technology, a study of particulate materials, their properties and behavior in processes, is of increasing importance in process industries. Particulates are frequently encountered in modern technology that it is difficult to name an area of industrial activity where such materials do not play a significant part.

The term " particulates" is used to include small pieces of solid material ordinarily called "particles", small masses of liquids usually termed "drop" and isolated quantities of gas surrounded by a continuous phase normally termed "bubbles".

Research in the field of particulates is being carried out in several disciplines-Chemical, mechanical, mining and metallurgical engineering, food and pharmaceutical technology, agriculture, medicine, air pollution etc. There is much in common between these various disciplines in regard to particulate problems.

In recent years, however, there is growing awareness in all the process industries and among research, design and development workers in chemical engineering, and other process industries, as our present knowledge of particulate systems is extremely meager and several workers have taken keen interest in the problems of Particulate Technology.

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- Mixing and Homogenization
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- Drying Operation
- Principles of Fluidization and Applications
- Rheology of Non-Newtonian Solid-in-liquid Systems
- Case Studies
- Case Study -1
- Case Study -2
- Case Study -3

Author

D. V. Ramana Rao

Dr. D. V. Ramana Rao received his B.Sc. (Hons.) and M.Sc. in Chemical Technology from Andhra University and Ph.D. in Chemical Engineering from Indian Institute of Technology, Madras in 1970. He worked as a Research Associate, as part of post doctoral work at DECHEMA-Institute, Frankfurt, Germany in the field of corrosion for two years. Before joining Ph.D. , he worked in Andhra University, I.I.T. , Kanpur, and in the Chemical Engineering Department of National Sugar Institute as a lecturer. After returning from

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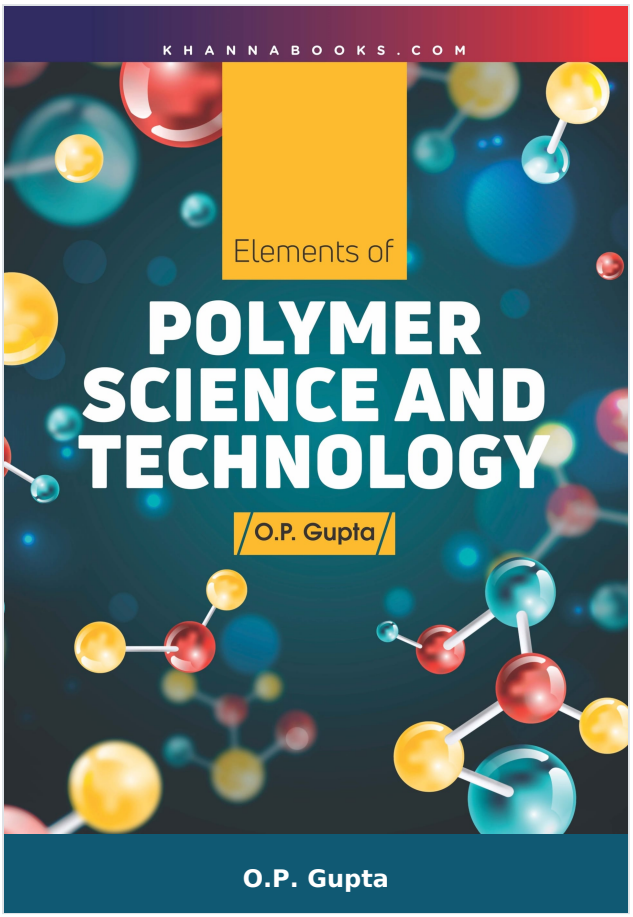
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Germany, he joined as a Scientist at senior level in National Council for Cement and Building Materials (NCB), [formerly known as Cement Research Institute of India], New Delhi and retired as Joint Director, after working for 26 years. After retiring from NCB, he worked as Professor & Head of Chemical Engineering Department of BVRIT, Hyderabad and IS Sadan College of Engg. and Technology, Hyderabad (present Boji Reddy College of Engineering) nearly for 2 years. At present he is the Managing partner fo Institute of Particulate Technology International (IPTI) from June 2004, which carries sponsored research work, training programmes for working personnel in Industry and Consultancy. He has authored 21 research papers, published in international, national journals and international seminars. He has to his credit 2 patents. He has prepared 15 and technical reports of R&D work and coordinated more than 30 training programmes and 4 workshops to working personnel in cement manufacturing industries. At present as a managing partner of IPTI, he has carried out 7 sponsored projects and two training programmes to working personnel in cement and pharmaceutical Industry.

N. C. L. N. Charyulu

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Raleigh, N.C., USA, another 3 moths at U.M.C., U.S.A. and Indian Secondment Visiting Professorship for one semester 1996-97 at School of Environment Resource Development, Asian Institute of Technology, Bangkok, Thailand. He has Coordinated two I.S.T.E. sponsored Winter/Summer School a) Fludization Engineering 1980;b) Bioconversion process optimization computer modeling -1989 and two refresher courses to working professionals a) Application of Chem. Eng. principle to Urea plant operator of MCF, Panambur, 1993 and b) Unit operations for design, production and maintenance personnel in cement and mineral based industries, October 20-25,2008. He guided four theses for Ph.D. a) Biosynthesis for Cellulase enzyme and Modeling, 1994. b(Bioremediation of industrial and domestic effluents by microorganisms1990c) Studies on biodegradation of high BOD effluent by anaerobic digestion and modeling 2001.d) Study of Coagulation/flocculation Process by polyelectrolytes for effective solid- liquid separation in water and wastewater treatment 2005. In addition he has guided over 20 M.Tech. theses. His areas of specialization are Chemical plant design, chemical reaction engineering, Enzyme synthesis, Biomediation, Biosynthesis and Bioconversion; Simulation & Computer Modeling, Application of Science and Technology to Rural areas for utilization of Agro waste Environmental Impact Assessment; Environment Management Planning. He published about 15 technical papers in International and national journals and seminars/symposia. He delivered number of invited lectures. He was a Chairman and / or member of several academic bodies of different Universities-Mysore, Banglore, Manglore, Osamnia, Kuvempu etc.



Elements of Polymer Science and Technology

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Product Description

This book covers the manufacture, properties of important polymers-plastics, rubbers & synthetic fibers. Important Information about various raw materials used for polymer industries, various polymers processing technologies & status of Indian polymer industry are also included. It also contains short questions & answers and multiple- choice questions & answers drawn from the examination papers of various engineering colleges for the benefits of the students.

This book is targeted to benefit the following:

1. Diploma in engineering student.
2. Degree in engineering students.
3. AMIE , AMIIM , AMIICHE Students.
4. MSc. & B.Sc. Students.
5. Faculty members and teaching staff.
6. Practicing engineers / Professionals.

The scope and coverage of subject matter presented can be gauged from glancing the contents portion of the book to judge its suitability and relevance for a particular target group of reader. Extensive use of internet resources has been made in gathering the relevant information and the subject matter has been presented in a simple, lucid and easy to understand manner for easy grasping of the subject.

Latest and updated information /data/ statistics pertaining to the subject matter has been included in this edition for the benefit of the readers.

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- Manufacture, Properties & Applications of Important Synthetic Fibers.
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Author

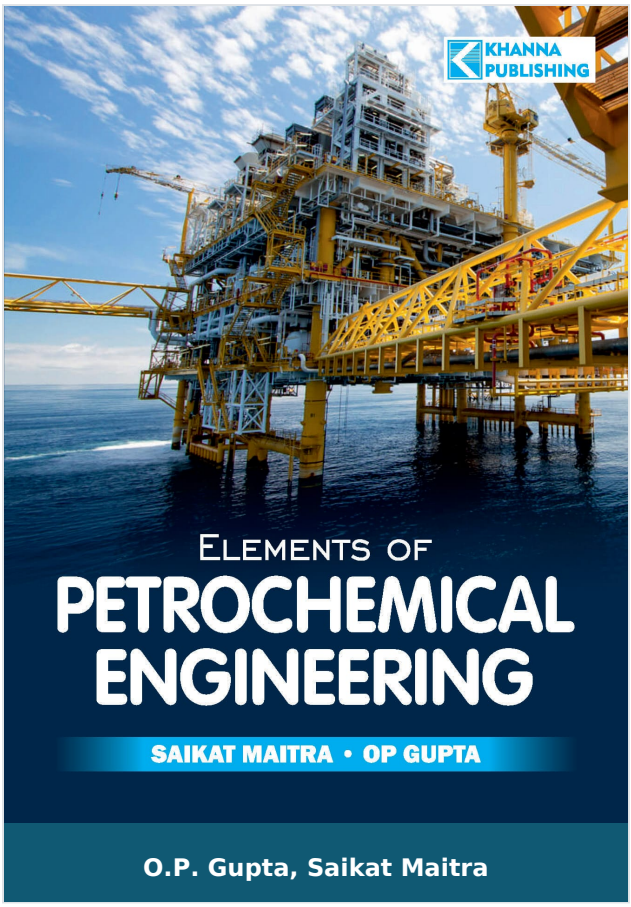
O.P. Gupta

O.P. Gupta Om Prakash Gupta is basically being a chemical engineer, he has a practising experience of efficient Ennergy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees (Technical), he has also visited england and france on a study tour sponsored by United Nations Development Programme (UNDP) to study the scope of energy conservation in steel plants in 1987.

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Elements of Petrochemical Engineering

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Product Description

Elements of Petrochemical Engineering book is meant for the students, teachers and practicing Engineers. This book contains the manufacture, properties and applications of important petrochemicals. Important information's about feedstocks and applications of petrochemical derived products, status of Indian Petrochemical Industry and environment standards for the petrochemical plant are given in the appendices. It also contains short questions and answers and multiple choice questions and answers drawn from examination papers of various engineering colleges for the benefits of the students.

The book is targeted to benefit the following :

Diploma in Engineering Students, Degree in Engineering Students, AMIE AMIIM, AMIICHE students, Faculty members and teaching staff, Practicing Engineers/Professionals. Latest and updated information/ data/statistics pertaining to the subject matter has been included in the edition for the benefit of the readers.

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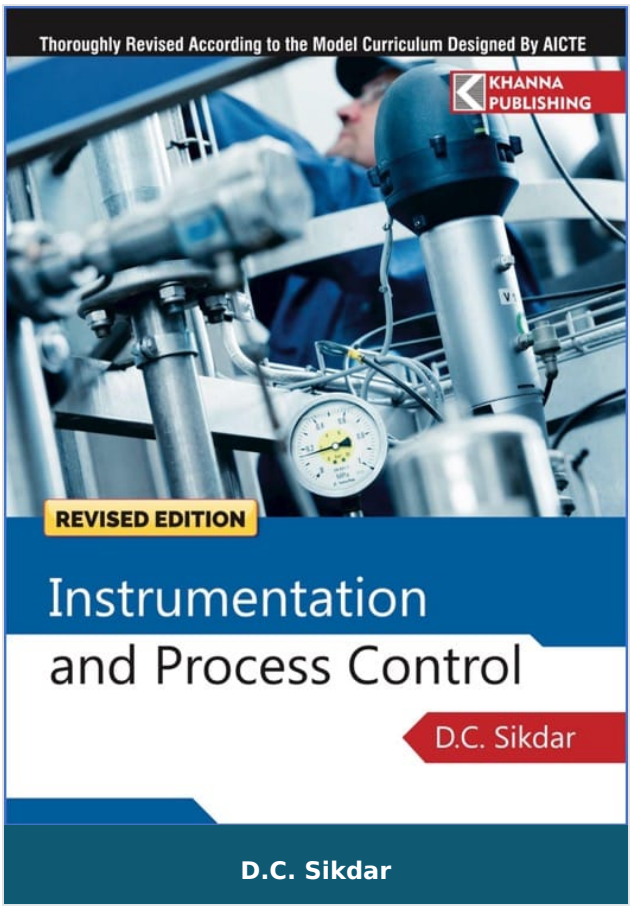
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Prof. Saikat Maitra is presently working as the Vice Chancellor of Maulana Abul Kalam Azad University of Technology, West Bengal (formerly West Bengal University of Technology). He did his B.Sc (Honours in Chemistry) from the Presidency Colleges, Kolkata, B.Tech, M.Tech and Ph.D in Chemical Technology from the University of Calcutta. He is a Chartered Chemical Engineer and Fellow of Institute of Engineers (India). Prof. Maitra earlier worked as Professor and Principal-in-Charge at Government College of Engineering; Ceramic Technology, Associate Professor at University Technology Petronas, Malasiya and as Scientist at Central Fuel Research Institute, Dhanbad. He has worked in industries too. Prof. Maitra published 150 research papers in different national & international journals, presented 60 papers in different conferences, filed two patents, authored three books and three book chapters. He has guided twelve Ph.D students, completed several funded research projects, organized several training programmes and workshops. He visited many countries like US, Australia, Italy, Malasiya, Singapore, Thailand, Bangladesh, Baharain etc for delivering lecturers.

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Instrumentation and Process Control

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Product Description

This book is students friendly. It also demonstrates how to solve the industry related problems that crop up in Chemical Engineering Practice. The chapters are organized in a simple way that enables that students to acquire and in depth understanding of the subject. The emphasis is given to the fundamental of measuring instrument, Laplace Transform, Basic Concept of process control, first order and Second order system, Control of Industrial Bio-processes, Controller and Final control elements, Block diagram reduction techniques, Determination of Stability of a process, Advanced control techniques and control Structure of unit operations, all coming under the realm of Process Control. Apart from the numerous illustrations, the book contains review questions, exercises and aptitude test in chemical Engineering which bridge the gap between theoretical learning and practical implementation. All numerical problems are solved in a systematic manner to reinforce the understanding of the concepts.

This book is primarily intended as a textbook for the under graduate students of Chemical Engineering, It will also be useful for other allied branches such as Medical Electronics, Aeronautical Engineering, Polymer Science and Engineering, Bio-technology as well as diploma in Chemical Engineering.

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- Controllers and Final Control Elements
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and half decades of teaching experience. Prof. Sikdar has published many papers in national and international journals of repute. he has received Best Research Thesis Award from Karnataka State Bio-fuel Development Board for guiding M.Tech Thesis on "Development of Bio-Hydrogen Dependent Fuel Cell using Micro Algae" in 2012. Prof. Sikdar is also a member of Indian Society of Technical Education (ISTE) and Indian Institute of Chemical Engineers (IIChE).

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D.C. Sikdar

Mechanical Operations (Particles and Motion of Particles)

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Chapters Covered:

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3. Size Reduction.

4. Flow of Fluid Past Immersed Bodies.

4. Motion of Particles Through Fluids.

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Author

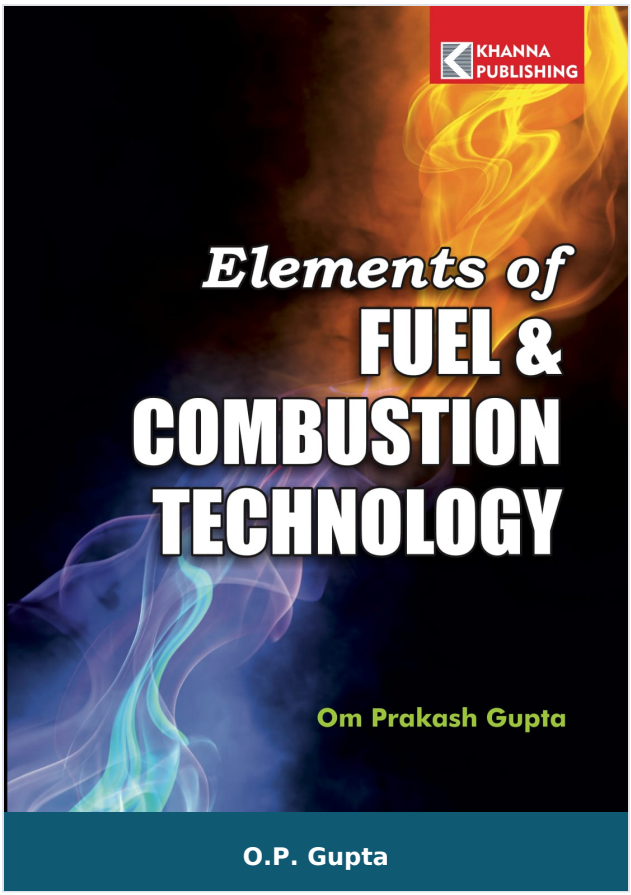
D.C. Sikdar

D.C. Sikdar D. C. Sikdar (Ph.D.) is an associate professor, Department of Chemical Engineering, Dayananda Sagar College of Engineering, Bangalore, with more than two and half decades of teaching experience. Prof. Sikdar has published many papers in national and international journals of repute. he has received Best Research Thesis Award from Karnataka State Bio-fuel Development Board for guiding M.Tech Thesis on "Development of Bio-Hydrogen Dependent Fuel Cell using Micro Algae" in 2012. Prof. Sikdar is also a member of Indian Society of Technical Education (ISTE) and Indian Institute of Chemical Engineers (IIChE).

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Product Description

This book contains detailed description of solid, liquid, gaseous fuels, combustion and furnaces. Beside short questions and answers and multiple choice questions & answers and multiple choice questions; answers drawn from the examination papers of various engineering Colleges and professional bodies examinations are also included.

The book will be useful for degree & diploma curriculum of various branches of Engineering and for various associate membership examinations conducted by professional bodies like Institution of Engineers (AMIE), Indian Institute of Metals(AMIIM), Indian Institute of Chemical Engineers(AMIICHE), Institute of Chemicals etc.

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- Refractories
- Appendix-A: Technical Data on Fuels
- Appendix-B: Short Questions and Answers on Fuel Technology
- Appendix-C: Multi-Choice Questions and Answers Fuel and Combustion Technology
- Appendix-D:Glossary of terms related to Fuels and Combustion Technology

Author

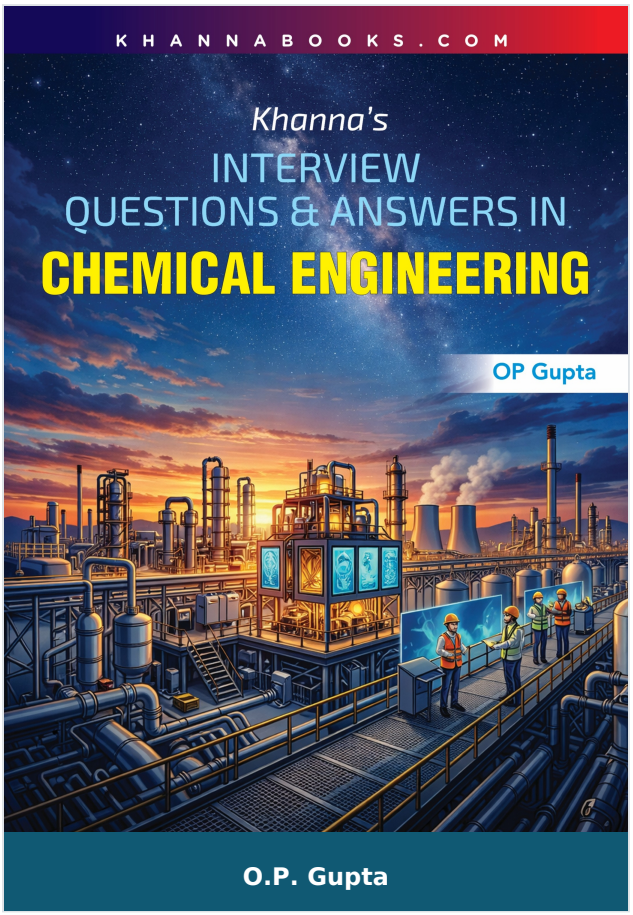
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Product Description

Interview Questions and Answers in Chemical Engineering by O.P. Gupta is a comprehensive, meticulously structured resource designed to bridge the gap between academic learning and professional recruitment. This first-edition volume provides a deep dive into the core pillars of the field, covering essential topics such as Fluid Mechanics, Heat Transfer, Mass Transfer, and Instrumentation. By presenting technical concepts in a clear question-and-answer format, the book helps readers master complex theories while simultaneously preparing them for the practical rigors of the industry.

The book is tailored for a wide-ranging audience, including diploma, degree (B. Tech.), and postgraduate (M. Tech.) students, as well as PhD candidates defending their theses. It also serves as an indispensable guide for professionals preparing for associate membership examinations like AMIE and AMIIChE, and for those appearing for recruitment interviews at premier public and private sector organizations like BARC, SAIL, and IOC. With its focus on both foundational principles and real-world applications—ranging from valve operations to advanced membrane separations—this book acts as a vital tool for anyone looking to excel in the chemical engineering profession.

Salient Features

• Core Technical Mastery: Comprehensive coverage of fundamental subjects like fluid mechanics, heat transfer, and thermodynamics.

• Interview-Ready Format: Concepts presented in a concise question-and-answer style, ideal for viva-voce and recruitment preparation.

• Industrial Equipment Insights: Functional details on hardware like orifice meters, venturi scrubbers, and various heat exchangers.

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• Advanced Separation Processes: In-depth explanations of liquid-liquid extraction, crystallization, and membrane-based techniques.

• Practical Applications: Strong focus on real-world scenarios, including wastewater treatment and industrial process control.

• Safety & Instrumentation: Critical guidance on PID controllers and specialized gauges for operational safety.

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- Temperature Measurement Instruments
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- Shell and Tube Heat Exchngers
- Evaporation and Evaporators
- Heat Pumps
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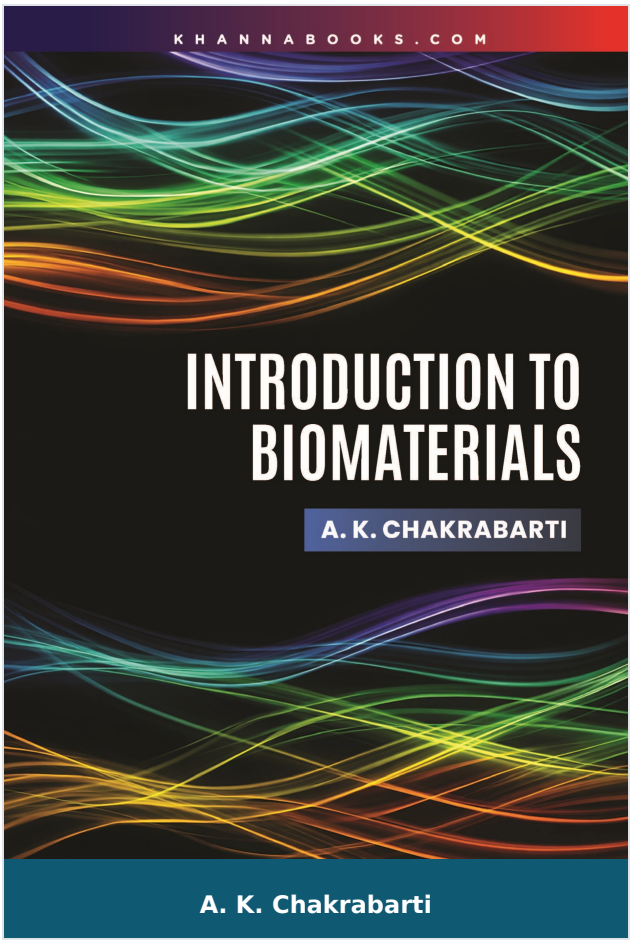
O.P. Gupta

O.P. Gupta Om Prakash Gupta is basically being a chemical engineer, he has a practising experience of efficient Ennergy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees (Technical), he has also visited england and france on a study tour sponsored by United Nations Development Programme (UNDP) to study the scope of energy conservation in steel plants in 1987.

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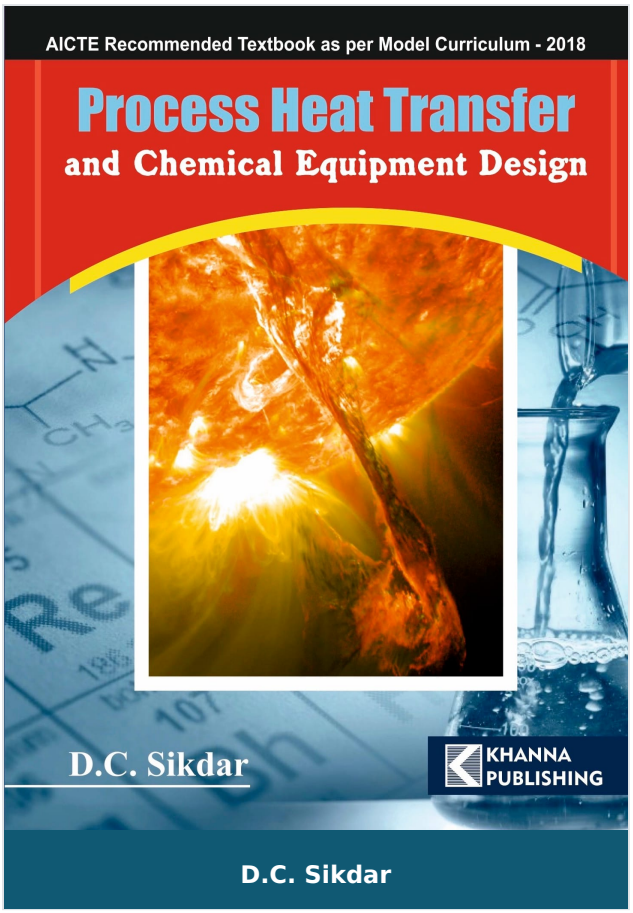
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Process Heat Transfer and Chemical Equipment Design

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Product Description

This book is students friendly. It also demonstrates how to solve the industry related problems that crop up in Chemical Engineering Practice. The chapters are organized in a simple way that enables the students to acquire an in depth understanding of the subject. The emphasis is given to the Basic concept of heat transfer, conduction, Insulations, Convection, Extended surface- Fins, Dimensionless group and Dimensional analysis, Heat transfer analogy, Heat transfer with phase change, Heat transfer equipment, Design of heat transfer equipment and Radiation, all coming under the realm of Process Heat Transfer. Apart from the numerous illustrations, the book contains review questions, exercises and aptitude test in Chemical Engineering which bridge the gap between theoretical learning and practical implementation. All numerical problems are solved in a systematic manner to reinforce the understanding of the concepts.

This book is primarily intended as a text book for the under graduate students of Chemical Engineering. It will also be useful for other allied branches such as, Aeronautical Engineering, Mechanical Engineering, Petrochemical, Polymer Science and Engineering, Bio-technology as well as Diploma in Chemical Engineering.

Key Features:

* Theoretical concept is explained with examples.

*Numerical problems are solved in systematic manner to reinforce the understanding of the

concepts.

*Included a large number of diagrams illustrating industrial physical problems.

*Only essential theory is discussed under each topic.

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* Stepwise procedure is given for solving problems under the topic of Chemical Equipment Design.

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- Heat Transfer Equipment
- Design of Heat Transfer Equipment
- Radiation
- Answer to Exercise Problems
- Aptitude Test in Heat Transfer
- Index

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D.C. Sikdar D. C. Sikdar (Ph.D.) is an associate professor, Department of Chemical Engineering, Dayananda Sagar College of Engineering, Bangalore, with more than two and half decades of teaching experience. Prof. Sikdar has published many papers in national and international journals of repute. he has received Best Research Thesis Award from Karnataka State Bio-fuel Development Board for guiding M.Tech Thesis on "Development of Bio-Hydrogen Dependent Fuel Cell using Micro Algae" in 2012. Prof. Sikdar is also a member of Indian Society of Technical Education (ISTE) and Indian

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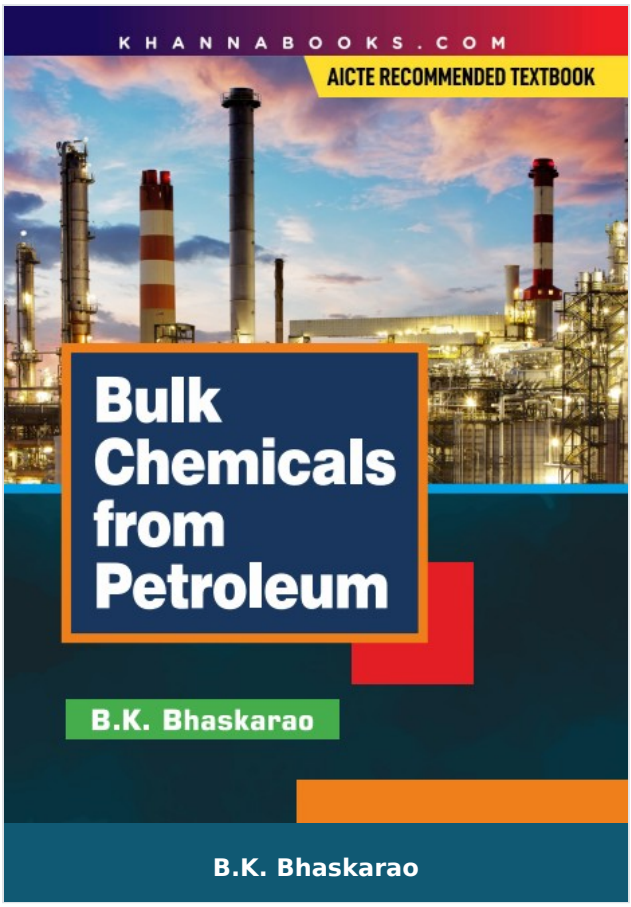
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Bulk Chemicals from Petroleum

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Product Description

This book covers petrochemical industry feedstocks, chemicals derived from C1, C2, C3, C4 & higher hydrocarbon atoms, synthesis gas & chemicals and petroleum aromatics. Besides, it contains comprehensive information pertaining to polymers which include plastics, synthetic fibers & elastomers and synthetic detergents. This book will serve as as reference material for the student, teachers and practicing engineers in th field of chemical, petroleum and petrochemical engineering.

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- Chapter-10: Plastics
- Chapter-11: Synthetic Detergents
- Chapter-12: Petroleum Coke and Carbon Black
- Chapter-13: Pollution and Toxicity

Author

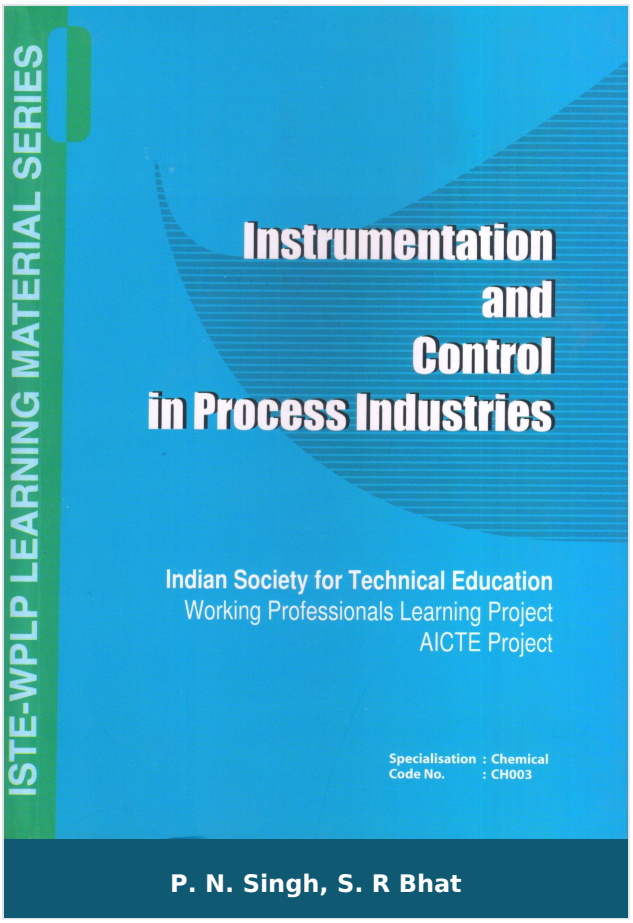
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Instrumentation And Control in Process Industries

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Product Description

Many case studies related to instruments and controllers in operating plants are covered. Chapter-1 covers the basic principle of control, various technical terms used in control, classification of control system, rudimentary knowledge on pneumatic, hydraulic and electronic controllers.

It is expected that by the end of covering these topics, people will be well familiar with technical jargons used by control engineers, why should there be automation, why process industries keep on investing very substantial amount to the extent of 20 to 30% of their plant outlay on instrumentation and control. Chapter 2- present a brief description of various types of instruments used in various industries.

Chapter-3 lays emphasis on dynamic behavior of process measuring instruments and other peripherals, response of open loop and closed loop systems, stability, controller tuning, estimation of transfer functions and system parameters in operational plants, determining optimum controller setting for best operation of plants and few case studies. Chapter 4- covers the scheme of operations and strategies to be followed while introducing controllers in plants.

It is expected that by the end of covering these topics, operating personnel will know theoretical basis of many operations on controllers that are being carried in plants, how some emergency measures are to be taken when the behavior of plant operations are not satisfactory.

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- FOREWORD
- PREFACE
- Introduction to Control Systems
- Measurement and Final Control Element
- Process Dynamics and Controllers Design
- Applications of Control Schemes
- Appendix
- A Simple Glossary
- References

Author

P. N. Singh

Dr. P. N. Singh is the Director (Retired), National Institute of Technology Karnataka, Surathkal. He is basically a Chemical Engineer and has over decades of experience in teaching and research related to processes industries. The coauthor, Mr. S. R. Bhat, is presently working as Group General Manager (Instrumentation) at Mangalore Refinery and Petrochemicals Limited, Mangalore. He graduate in Chemical Engineering from Indian Institute of Technology, Chennai. Atomic Research centre, for seven years. Later he worked for Humphreys and Glasgow Consultants, for three years. He ha also worked for Uhde India Limited, for seven years. For the last sixteen years, he has been working for Mangalore Refinery and Petrochemicals in various capacities. He has introduced many innovative ideas in running the process plants, particularly in the areas of instrumentation and control.

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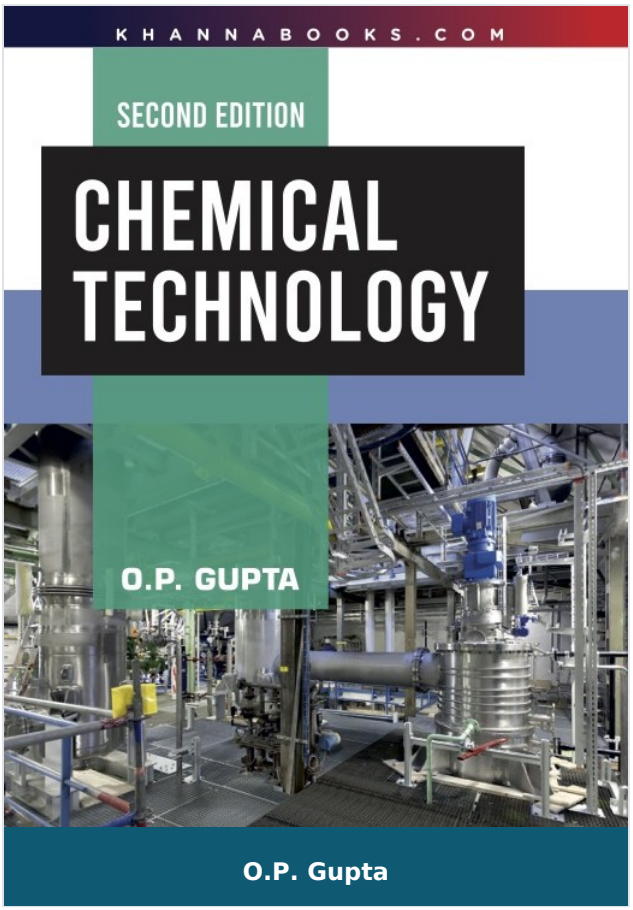
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The first author of this learning material, Dr. P. N. Singh is the Director (Retired), National Institute of Technology Karnataka, Surathkal. He is basically a Chemical Engineer and has over decades of experience in teaching and research related to processes industries. The coauthor, Mr. S. R. Bhat, is presently working as Group General Manager (Instrumentation) at Mangalore Refinery and Petrochemicals Limited, Mangalore. He graduate in Chemical Engineering from Indian Institute of Technology, Chennai. Atomic Research centre, for seven years. Later he worked for Humphreys and Glasgow Consultants, for three years. He ha also worked for Uhde India Limited, for seven years. For the last sixteen years, he has been working for Mangalore Refinery and Petrochemicals in various capacities. He has introduced many innovative ideas in running the process plants, particularly in the areas of instrumentation and control.

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Product Description

This book will be useful for degree & diploma Curriculum of Engineering and for various associate membership examinations conducted by professional bodies like Institution of Engineers(AMIE) and Indian Institute of chemical Engineers (AMIICHE) etc.

Salient Features of This Book

* Subject matter has been presented in simple, lucid & easy to understand language

* Covers all the topics included in the syllabus of various engineering colleges/Technical Institutes & professional bodies examination papers.

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- Chapter-12: Soaps and Detergents
- Chapter-13: Pulp and Paper industries
- Chapter-14: Industrial fermentation- Ethyl alcohol
- Chapter-15: Multiple choice Questions & Answers on Chemical Process Technology

Author

O.P. Gupta

O.P. Gupta Om Prakash Gupta is basically being a chemical engineer, he has a practising experience of efficient Ennergy management and HR functions in steel Industry for more than three decades. privileged to be the youngest writer of technical books in the country (for he had written his first book at the age of 24 years while doing M. Tech. at I.I.T kanpur in 1979), he has authored many frontline books for engineering students. besides, being the regular faculty member in technical courses for Management Trainees

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