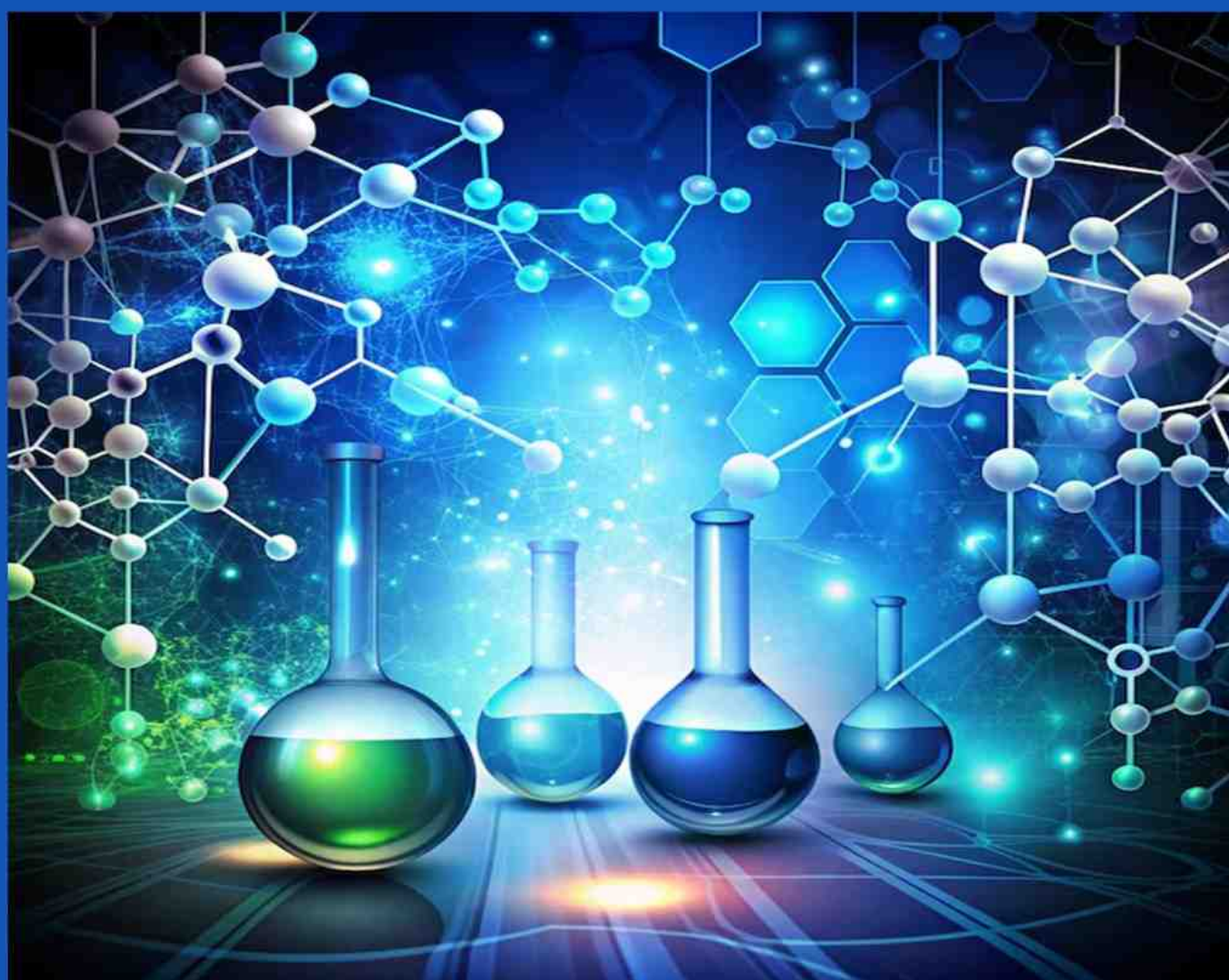


Basic Concepts of

# CHEMICAL KINETICS



**Dr. Damodar V. Prabhu**  
**Dr. Harichandra A Parbat**  
**Dr. Venkat S Narayan**



# Basic Concepts of Chemical Kinetics



**First Edition**

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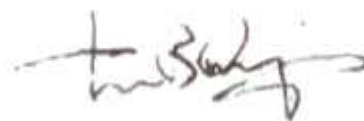
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# Foreword

Chemical Kinetics, the study of chemical reactions is a well-researched subject all over the world. The book entitled "Basic Concepts of Chemical Kinetics" by Dr. Damodar V Prabhu, Dr. Venkat S Narayan and Dr. HA Parbat and published by Iterative International Publishers (India and USA) discusses in a simple and lucid language the principles of Chemical Kinetics, an important branch of Chemistry with applications in diverse fields.

Starting with rate and order of reaction and integrated rate equations, the authors go on to describe the important theories of reaction rates, kinetics of reactions in solution and kinetics of complex reactions including surface, photochemical and polymerization reactions. Catalysis and Adsorption are an integral part of all reaction studies and hence have been included. Several solved numerical problems are included along with relevant questions and numerical problems at the end of each chapter. The authors have adhered to IUPAC recommendations of nomenclature, units, symbols and nomenclature throughout the book.

The book will be useful to college and university students, teachers and industry chemists and will be a good guide to those who wish to do research in Chemical Kinetics. The unique feature of the book is the clarity with which some of the difficult concepts have been explained. The book is the result of the long years of teaching and research experience of the authors and is a good addition to the literature on Chemical Kinetics.



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# Preface

Chemical Kinetics, an important branch of Physical Chemistry is the study of the rates of chemical reactions and is well researched all over the world. A course in Chemical Kinetics is an essential part of Chemistry curricula worldwide. Chemical Kinetics finds important applications in diverse fields such as natural products, health and medicine, reactions occurring in nature like Photosynthesis, proper storage of drugs and pharmaceuticals, preservation of foods and protection of crops.

The aim of this book is to introduce the basic concepts of Chemical Kinetics in a clear and lucid manner and to generate in the reader an interest in the subject. The book will be particularly useful to students who wish to study the fascinating subject of Chemical Kinetics and will serve as an initial guide to those who wish to pursue advanced studies and research in the subject.

The chapters cover integrated rate equations, important theories of chemical reaction rates, Kinetics of complex reactions including photochemical reactions, surface reactions, fast reactions, oscillating reactions, harpoon reactions and surface reactions. Polymerization reaction kinetics has been dealt with in depth. Adsorption and Catalysis are an integral part of all reaction studies and hence have been included. Green catalysts, the new breed of environmentally friendly catalysts are also discussed.

Several solved numerical problems have been included and at the end of each chapter along with relevant questions and numerical problems.

IUPAC recommendations as regards nomenclature, terminology, units and symbols have been followed throughout. A bibliography of useful reference books has been included to motivate the readers to undertake further studies in Chemical Kinetics. Brief biographical sketches of the pioneers of Chemical Kinetics who have contributed to the growth and development of the subject, have also been included.

The book is based on our long years of teaching and research in Chemical Kinetics. We hope the book will be useful to students, researchers and readers with an interest in Chemical Kinetics.

Suggestions for the improvement of the book are welcome

Dr. Damodar V. Prabhu,

Dr. Harichandra A. Parbat,

Dr. Venkat S. Narayan.

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