

"As a result of the increased interest in the low-pressure plasma science, researchers and engineers are faced with the problem of evaluating the broad and varied literature from a common basis of fundamental plasma chemistry. This book that you hold in your hands meets this challenge! This book represents the first comprehensive contribution that presents fundamentals of the plasma chemistry and scientific basis of most of modern applications of the plasma technologies. This book is written by my distinguished colleague and friend, Alexander Fridman, who has made outstanding contributions in the development of modern plasma science and engineering, especially in plasma kinetics of excited and charged particles, in development of novel non-thermal atmospheric pressure discharges, in fuel conversion and hydrogen production, in plasma sterilization and disinfection, and more recently, the breakthrough developments in plasma medicine. The book *Plasma Chemistry* is of unique value to scientists, engineers and students in the domain of plasma physics, chemistry, and engineering. It is my great pleasure to recommend this excellent work to practitioners, students, and scientists who are interested in fundamentals and applications of plasma chemistry."

— Jean-Michel Pouvesle, President of the International Plasma Chemistry Society,
Director of GREMI, University of Orleans, France

This unique book provides a fundamental introduction to all aspects of modern plasma chemistry. The book describes mechanisms and kinetics of chemical processes in plasma, plasma statistics, thermodynamics, fluid mechanics, and electrodynamics, as well as all major electric discharges applied in plasma chemistry. The book considers most of the major applications of plasma chemistry, from electronics to thermal coatings, from treatment of polymers to fuel conversion and hydrogen production, and from plasma metallurgy to plasma medicine. The book can be helpful to engineers, scientists, and students interested in plasma physics, plasma chemistry, plasma engineering, and combustion, as well as in chemical physics, lasers, energy systems, and environmental control. The book contains an extensive database on plasma kinetics and thermodynamics, as well as many convenient numerical formulas for practical calculations related to specific plasma-chemical processes and applications. The book contains a large number of problems and concept questions that are helpful in university courses related to plasma, lasers, combustion, chemical kinetics, statistics and thermodynamics, and high-temperature and high-energy fluid mechanics.

Alexander Fridman is Nyheim Chair Professor of Drexel University and Director of Drexel Plasma Institute. His research focuses on plasma approaches to material treatment, fuel conversion, hydrogen production, biology, medicine, and environmental control. Professor Fridman has more than 35 years of plasma research experience in national laboratories and universities in Russia, France, and the United States. He has published 6 books and 450 papers, chaired several international plasma conferences, and received numerous awards, including the Stanley Kaplan Distinguished Professorship in Chemical Kinetics and Energy Systems, the George Soros Distinguished Professorship in Physics, and the State Prize of the USSR for discovery of selective stimulation of chemical processes in non-thermal plasma.

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