1. Record Nr. UNINA9910254103703321

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Titolo	Atmospheric Reaction Chemistry / / by Hajime Akimoto
Pubbl/distr/stampa	Tokyo : , : Springer Japan : , : Imprint : Springer, , 2016
ISBN	4-431-55870-5
Edizione	[1st ed. 2016.]
Descrizione fisica	1 online resource (448 p.)
Collana	Springer Atmospheric Sciences, , 2194-5217
Disciplina	551.511
Soggetti	Atmospheric science Environmental chemistry Air - Pollution Environmental sciences Chemistry, Physical and theoretical Atmospheric Sciences Environmental Chemistry Atmospheric Protection/Air Quality Control/Air Pollution Environmental Science and Engineering Physical Chemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	Introduction to Atmospheric Chemistry -- Dawn of Modern Chemistry and Chemistry of Atmosphere -- Chemistry of Atmosphere to Atmospheric Chemistry -- Textbooks of Atmospheric Chemistry -- Fundamentals of Chemical Reactions -- Photochemistry and Photolytic Reactions -- Bimolecular Reactions -- Termolecular and Unimolecular Reactions -- Multiphase Heterogeneous Reactions -- Solar Radiation and Actinic Flux -- Solar Spectrum Outside of the Atmosphere -- Attenuation of Solar Radiation by N2, O2 and O3 in the Atmosphere -- Solar Zenith Angle and Air Mass -- Scattering by Atmospheric Molecule and Particles, and Surface Albedo -- Actinic Flux and Photolysis Rates -- Absorption Spectrum of Atmospheric Molecules, and Photolysis Reactions -- Solar Spectrum in the Troposphere and the Stratosphere -- Photolysis in the Troposphere -- Photolysis in the Stratosphere -- Photolysis of Inorganic Halogen Compounds -- Homogeneous

Elementary Reactions in the Atmosphere and Rate Constants -- Reactions of O(3P) and O(1D) Atoms -- Reactions of OH Radicals -- Reactions of HO2 and CH3O2 Radicals -- Reactions of O3 -- Reactions of NO3 Radicals -- Reactions of Cl Atoms and ClO Radicals -- Heterogeneous Reactions in the Atmosphere and Uptake Coefficients -- Uptake to Water Droplet -- Uptake to Sea Salt and Alkali Halides, and Surface Reactions -- Uptake to Soil and Mineral Dusts, and Surface Reactions -- Uptake to Soot, and Surface Reactions -- Surface Reactions on Polar Stratospheric Clouds (PSC) -- Tropospheric Reaction Chemistry -- HOx Chain Reactions and Oxidation of Methane in the Natural Atmosphere -- Oxidation Reactions of VOC in the Polluted Atmosphere -- Production and Loss of O3 by HOx Chain Reactions -- Measurements of OH and HO2 Radicals in the Atmosphere, and Validation of Models -- Tropospheric Halogen Chemistry -- Tropospheric Sulfur Chemistry -- “Discovery” of OH Radical Chain Mechanism -- Smog Chamber -- Stratospheric Reaction Chemistry -- Pure Oxygen Atmosphere and Ozone Layer -- Ozone Loss Cycles by Trace Gases -- Gas Phase Chain Reactions and Ozone Destruction by CFC -- Multiphase Reactions on PSC and Ozone Hole -- Stratospheric Sulfur Chemistry.

Sommario/riassunto

This book is aimed at graduate students and research scientists interested in gaining a deeper understanding of atmospheric chemistry, fundamental photochemistry, and gas phase and heterogeneous reaction kinetics. It also provides all necessary spectroscopic and kinetic data, which should be useful as reference sources for research scientists in atmospheric chemistry. As an application of reaction chemistry, it provides chapters on tropospheric and stratospheric reaction chemistry, covering tropospheric ozone and photochemical oxidant formation, stratospheric ozone depletion and sulfur chemistry related to acid deposition and the stratospheric aerosol layer. This book is intended not only for students of chemistry but also particularly for non-chemistry students who are studying meteorology, radiation physics, engineering, and ecology/biology and who wish to find a useful source on reaction chemistry.