

1. Record Nr.	UNINA9910827672703321
Titolo	Cross sections and rate constants for physical and chemical processes [[electronic resource] /] / edited by G.G. Chernyl ... [et al.]
Pubbl/distr/stampa	Reston, Va., : American Institute of Aeronautics and Astronautics, 2002
ISBN	1-60086-666-2 1-60086-447-3
Edizione	[English ed.]
Descrizione fisica	1 online resource (316 p.)
Collana	Progress in astronautics and aeronautics ; ; v. 196 Physical and chemical processes in gas dynamics ; ; v. 1
Altri autori (Persone)	ChernyiG. G
Disciplina	629.1 s 620.1/074
Soggetti	Gas dynamics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Originally published in Russian in 1995 by Moscow University Press, Moscow, Russia.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	""Cover""; ""Title""; ""Copyright ""; ""Contents""; ""Preface""; ""Chapter 1 General Notions and Essential Quantities""; ""I. Particles and Processes Under Consideration""; ""II. Physical Quantities, Notations, and Units of Measurement""; ""A. Physical Quantities""; ""B. Physical Constants and Units of Measure""; ""III. Description and Characteristics of Interacting Particles""; ""A. General Notation of Particles""; ""B. Extended Notation of Particle States (Subscripts/Superscripts)""; ""C. Electronic, Vibrational, and Rotational States"" ""D. Statistical Weight (Multiplicity) of Electronic States""""E. Statistical Weight (Multiplicity), Vibrational Frequency, Vibrational Energy, and Characteristic Vibrational Temperature of Molecules and Molecular Ions""; ""F. Statistical Weight (Multiplicity), Rotational Energy, and Characteristic Rotational Temperature of Molecules and Molecular Ions""; ""IV. Classical Pattern of Binary Collisions of Particles""; ""V. Characteristic Dynamic Parameters""; ""A. Scales of Length and Time""; ""B. Characteristic Criteria"" ""VI. Particle Distribution over Velocities and Energy: Temperatures of Different Degrees of Freedom""""VII. Mean Relative Velocity of Particles in a Gas""; ""VIII. Partition Functions and the Mean Energy of Particles in a Gas""; ""A. Partition Functions""; ""B. Mean Energy of Particles (Per Particle)""; ""C. Assumptions""; ""IX. Heat of Reaction""; ""X. Relation

Between Particle Number and Gas Pressure"; "XI. Formulas for the Rate Constants of Specific Processes"; "A. Rate Constant for Arbitrary Energy Dependence of the Process Cross Section"; "B. Formulas for Cross Sections and Rate Constants"; "References"; "Chapter 2 Elastic Collisions in Gases and Plasmas (T Models)"; "I. Elastic Collisions of Neutral Particles ($X + Y \rightarrow X + Y$)"; "A. Hard-Sphere Model (T.1)"; "B. Repulsive Power-Law Potential Model (T.2)"; "C. Hard-Sphere Model with Variable Diameter (T.3)"; "D. Model Based on Lennard-Jones Potential (T.4)"; "E. Model Based on Born-Mayer Potential (T.5)"; "F. Model of Attracting Particles (T.6)"; "II. Elastic Collisions Involving Charged Particles"; "A. Effective Radius Approximation for Electron-Atom and Electron-Molecule Collisions (T.7)"; "B. Classical Approximation for Electron-Molecule Collisions (T.8)"; "C. Born Approximation for Electron-Molecule Collisions (T.9)"; "D. Model of Electron Scattering by Molecule with High Dipole Moment (T.10)"; "E. Classical Approximation for Ion-Atom and Ion-Molecule Collisions (T.11)"; "F. Model Based on the Born-Mayer Repulsive Potential for Ion Collisions with Neutral Particles (T.12)"; "G. Model Based on the Shielded Coulomb Potential (T.13)"; "References"; "Chapter 3 Rotational Energy Exchange (R Models)";
