

1. Record Nr.	UNINA9910790571403321
Autore	Kratz Jens-Volker
Titolo	Nuclear and radiochemistry [[electronic resource] ] : fundamentals and applications // Jens-Volker Kratz and Karl Heinrich Lieser
Pubbl/distr/stampa	Weinheim, : Wiley-VCH Verlag GmbH & Co. KGaA, 2013
ISBN	3-527-65335-X 3-527-65333-3 3-527-65336-8
Edizione	[3rd, rev. ed.]
Descrizione fisica	1 online resource (933 p.)
Altri autori (Persone)	LieserKarl Heinrich
Disciplina	541.38
Soggetti	Nuclear chemistry Radiochemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover; Related Titles; Title page; Copyright page; Contents for Volume 1; Contents for Volume 2; Preface; Volume 1; 1: Fundamental Concepts; 1.1 The Atom; 1.2 Atomic Processes; 1.3 Discovery of the Atomic Nucleus; 1.4 Nuclear Decay Types; 1.5 Some Physical Concepts Needed in Nuclear Chemistry; 1.5.1 Fundamental Forces; 1.5.2 Elements from Classical Mechanics; 1.5.3 Relativistic Mechanics; 1.5.4 The de Broglie Wavelength; 1.5.5 Heisenberg Uncertainty Principle; 1.5.6 The Standard Model of Particle Physics; 1.5.7 Force Carriers; Reference; Further Reading; 2: Radioactivity in Nature 2.1 Discovery of Radioactivity2.2 Radioactive Substances in Nature; References; Further Reading; 3: Radioelements and Radioisotopes and Their Atomic Masses; 3.1 Periodic Table of the Elements; 3.2 Isotopes and the Chart of Nuclides; 3.3 Nuclide Masses and Binding Energies; 3.4 Evidence for Shell Structure in Nuclei; 3.5 Precision Mass Spectrometry; References; Further Reading; 4: Other Physical Properties of Nuclei; 4.1 Nuclear Radii; 4.2 Nuclear Angular Momenta; 4.3 Magnetic Dipole Moments; 4.4 Electric Quadrupole Moments; 4.5 Statistics and Parity; 4.6 Excited States; References Further Reading5: The Nuclear Force and Nuclear Structure; 5.1 Nuclear Forces; 5.2 Charge Independence and Isospin; 5.3 Nuclear Matter; 5.4 Fermi Gas Model; 5.5 Shell Model; 5.6 Collective Motion in Nuclei; 5.7

Nilsson Model; 5.8 The Pairing Force and Quasi-Particles; 5.9 Macroscopic-Microscopic Model; 5.10 Interacting Boson Approximation; 5.11 Further Collective Excitations: Coulomb Excitation, High-Spin States, Giant Resonances; References; Further Reading; 6: Decay Modes; 6.1 Nuclear Instability and Nuclear Spectroscopy; 6.2 Alpha Decay; 6.2.1 Hindrance Factors; 6.2.2 Alpha-Decay Energies  
6.3 Cluster Radioactivity; 6.4 Proton Radioactivity; 6.5 Spontaneous Fission; 6.6 Beta Decay; 6.6.1 Fundamental Processes; 6.6.2 Electron Capture-to-Positron Ratios; 6.6.3 Nuclear Matrix Elements; 6.6.4 Parity Non-conservation; 6.6.5 Massive Vector Bosons; 6.6.6 Cabibbo-Kobayashi-Maskawa Matrix; 6.7 Electromagnetic Transitions; 6.7.1 Multipole Order and Selection Rules; 6.7.2 Transition Probabilities; 6.7.3 Internal Conversion Coefficients; 6.7.4 Angular Correlations; References; Further Reading; 7: Radioactive Decay Kinetics; 7.1 Law and Energy of Radioactive Decay; 7.2 Radioactive Equilibria  
9.2.1 Ionization Chambers

---

Sommario/riassunto

The third edition of this classic in the field is completely updated and revised with approximately 30% new content so as to include the latest developments. The handbook and ready reference comprehensively covers nuclear and radiochemistry in a well-structured and readily accessible manner, dealing with the theory and fundamentals in the first half, followed by chapters devoted to such specific topics as nuclear energy and reactors, radiotracers, and radionuclides in the life sciences. The result is a valuable resource for both newcomers as well as established scientists in the field.

---