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Titolo	Nuclear- and radiochemistry . Volume 1 Introduction / / by Frank Rosch
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ISBN	1-5231-0044-3 3-11-038476-0 3-11-022192-6
Descrizione fisica	1 online resource (484 p.)
Collana	De Gruyter graduate
Disciplina	541/.38
Soggetti	Radiochemistry Nuclear chemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	The atom's structure I : proton and electron -- The atom's structure II : nucleus and nucleons -- Nucleons : binding energies and shell structures -- From stable to unstable nuclides -- From stable to unstable nuclides : mathematics -- Processes of transformations : overview -- b transformations I : elementary particles -- b transformations II : b- process, b+ process and electron capture -- a-emission -- Spontaneous fission -- Secondary and post-processes of transformations -- Post-processes of primary and secondary transformations -- Nuclear reactions.
Sommario/riassunto	Nuclear chemistry represents a vital field of basic and applied research. Modern applications cover, for example, fundamental aspects of energetics and high-sensitive, high-selective and non-destructive analytical technologies. Nuclear chemistry and radiopharmaceutical chemistry are increasingly used to bridge pharmaceutical and medical research with state-of-the-art non-invasive molecular diagnosis as well as with patient-individual treatment. This volume I on Introduction to Nuclear Chemistry describes the origin of unstable atoms and their various primary and secondary pathways to stabilize. Volume II illustrates the spectrum of modern applications of nuclear and

radiochemistry. In various chapters, the present volume I addresses - the structure of atoms and the nuclei of atoms, - the transformation of unstable nuclei to more stable nucleon configurations,- the mechanisms of the main transformation pathways and their kinetics,- the character of the radiation emitted from these processes,- the interaction of this radiation with condensed matter,- and finally nuclear reaction processes to produce new nuclei.
This text book is conceived to meet the demand of state-of-the-art literature to teach the fundamentals as well as the modern applications of nuclear chemistry. The work will consist of two volumes: the first one covering the basics of nuclear chemistry such as the relevant parameters of instable atomic nuclei, the various modi of radioactive transmutations, the corresponding types of radiation including their detection and dosimetry, and finally the mechanisms of nuclear reactions. The second volume addresses relevant fields of nuclear chemistry, such as the chemistry of radioactive elements, application of radioactive nuclei in life sciences, nuclear energy, waste managements and environmental aspects, radiochemical separations, radioanalytical and spectroscopic methods, etc. Here, leading experts will contribute the recent knowledge on individual aspects. Frank Rösch is author of more than 200 peer-reviewed papers and book chapters on fundamental and applied radiochemistry and editor of the 5-volume Handbook of Nuclear Chemistry. In 1996 he was appointed professor of Nuclear Chemistry and Radiopharmaceutical Chemistry at the Institute of Nuclear Chemistry of the Johannes Gutenberg University of Mainz, Germany.