

1. Record Nr.	UNINA9910830031503321
Autore	Voges R (Rolf)
Titolo	Preparation of compounds labeled with tritium and carbon-14 [[electronic resource] /] / Rolf Voges, J. Richard Heys, Thomas Moenius
Pubbl/distr/stampa	Chichester, United Kingdom, : Wiley, 2009
ISBN	1-282-13816-2 9786612138164 0-470-74344-1 0-470-74343-3
Descrizione fisica	1 online resource (684 p.)
Altri autori (Persone)	HeysJ. R (J. Richard) MoeniusThomas
Disciplina	547.2 572.36 572/.36
Soggetti	Organic compounds - Synthesis Radiolabeling Tritium Carbon - Isotopes
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	Preparation of Compounds Labeled with Tritium and Carbon-14; Contents; Preface; Glossary; Author Biographies; 1 Introduction; 1.1 Physical Properties of Tritium and Carbon-14; 1.2 Purification; 1.3 Analysis; 1.3.1 Chemical Identity; 1.3.2 Chemical (and Enantiomeric) Purity; 1.3.3 Radiochemical (and Radionuclidic) Purity; 1.3.4 Specific Activity; 1.3.5 Position of Label; 1.4 Stability and Storage of Compounds Labeled with Tritium or Carbon-14; 1.5 Specialist Techniques and Equipment; References; 2 Strategies for Target Preparation; 2.1 Formulating Target Specifications 2.2 Planning Radiotracer Preparations2.2.1 The Construction Strategy; 2.2.2 Reconstitution Strategies; 2.2.3 The Derivatization Strategy; 2.2.4 Selection of an Appropriate Strategy; 2.2.5 Case Studies of Strategy Development; References; 3 Preparation of Tritium-Labeled Compounds by Isotope Exchange Reactions; 3.1 Homogeneous Acid-

or Base-Catalyzed Exchange; 3.1.1 Exchange without Added Acid or Base; 3.1.2 Exchange under Acidic Conditions; 3.1.3 Exchange under Basic Conditions; 3.2 Heterogeneous Catalysis with Tritium in Solvent; 3.2.1 Metals; 3.2.2 Other Catalysts
3.3 Heterogeneous Catalysis in Solution with Tritium Gas
3.3.1 Metal Catalysts with Nonreducible Substrates in Aqueous Solution; 3.3.2 Metal Catalysts with Nonreducible Substrates in Organic Solvents; 3.3.3 Other Catalysts; 3.3.4 Metal Catalysts with Reducible Substrates; 3.4 Homogeneous Catalysis in Solution with Tritiated Water; 3.4.1 Exchange Catalyzed by Metal Salts; 3.4.2 Exchange Catalyzed by Organoruthenium Complexes; 3.4.3 Exchange Catalyzed by Iridium Dionates; 3.4.4 Exchange Catalyzed by Iridium Cyclopentadienides; 3.5 Homogeneous Catalysis with Tritium Gas; 3.5.1 Iridium Phosphines
3.5.2 Iridium Dionate Complexes
3.5.3 Iridium Cyclopentadienide Complexes; 3.6 Solvent-Free Catalytic Exchange; 3.6.1 High-Temperature Solid-State Catalytic Isotope Exchange; 3.6.2 Thermal Tritium Atom Bombardment; 3.6.3 Other Radiation-Induced Labeling Methods; References; 4 Preparation of Tritium-Labeled Compounds by Chemical Synthesis; 4.1 Catalytic Tritiations; 4.1.1 Tritiation of Carbon-Carbon Multiple Bonds; 4.1.2 Tritiation of Carbon-Heteroatom Multiple Bonds; 4.1.3 Homogeneously Catalyzed Reactions; 4.2 Catalytic Tritiolyyses; 4.2.1 Tritiodehalogenations
4.2.2 Tritiolyyses of Benzylic N- and O-Functions
4.2.3 Tritiodesulfurizations; 4.3 Tritide Reductions; 4.3.1 Sodium Borotritide (NaB_3H_4); 4.3.2 Sodium Cyanoborotritide ($\text{NaB}_3\text{H}_3\text{CN}$); 4.3.3 Sodium/Tetramethylammonium Triacetoxymborotritide [$\text{Na}/\text{NMe}_4\text{B}_3\text{H}(\text{OAc})_3$]; 4.3.4 Lithium Tritide (Li_3H); 4.3.5 Lithium Borotritide (LiB_3H_4); 4.3.6 Lithium Triethylborotritide ($\text{LiEt}_3\text{B}_3\text{H}$, Li-Super-Tritide); 4.3.7 Lithium Tri-sec-Butylborotritide [$\text{Li}(\text{sec-Bu})_3\text{B}_3\text{H}$, Li T-Selectride]; 4.3.8 Lithium [3H₂]Boratabicyclo[3.3.1]nonane; 4.3.9 Tritiated Borane (THF-Complex) (B_2H_6 ; $\text{B}_3\text{H}_3 \cdot \text{THF}$); 4.3.10 Tritiated Alkylboranes
4.3.11 Lithium Aluminum Tritide (LiAl_3H_4)

Sommario/riassunto

Compounds labeled with carbon-14 and tritium are indispensable tools for research in biomedical sciences, discovery and development of pharmaceuticals and agrochemicals. Preparation of Compounds Labeled with Tritium and Carbon-14 is a comprehensive, authoritative and up-to-date discussion of the strategies, synthetic approaches, reactions techniques, and resources for the preparation of compounds labeled with either of these isotopes. A large number of examples are presented for the use of isotopic sources and building blocks in the preparation of labeled target compounds, illustrating
