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Nota di contenuto	Lithium Compounds in Organic Synthesis; Contents; List of Contributors; Foreword; Preface; Part I New Structural Aspects of Lithium Compounds; Chapter 1 Structure-Reactivity Relationship in Organolithium Compounds; 1.1 Structural Principles in Organolithium Compounds; 1.2 Donor-Base-Free Structures; 1.2.1 Tetramers; 1.2.2 Hexamers; 1.2.3 Comparison of [Me <sub>3</sub> SiCH <sub>2</sub> Li] <sub>6</sub> and [n-BuLi] <sub>6</sub> ; 1.3 Disaggregation with Lewis Bases; 1.3.1 Tetramers of Alkylolithium Compounds; 1.3.2 Asymmetric Aggregates of [Me <sub>3</sub> SiCH <sub>2</sub> Li] (4); 1.3.3 An Octameric Aggregate of [Me <sub>3</sub> SiCH <sub>2</sub> Li] <sub>6</sub> 1.4 Donor-Base-Induced Dimers and Monomers 1.4.1 Alkylolithium and Trimethylsilylmethylolithium Compounds; 1.4.2 PMDETA Aggregated Monomers; 1.5 Heterobimetallic Organolithium Compounds; 1.6 Conclusion and Outlook; References; Further Reading; Chapter 2 Computational Perspectives on Organolithiums; 2.1 Introduction; 2.2 The Nature of Bonds to Lithium; 2.3 Aggregation of Lithium Organic Compounds; 2.4 Solvation Effects; 2.5 Lithium Alkoxides and Lithium Amides; 2.6 Computational Studies on Various Organolithium

Applications; 2.7 Conclusion and Outlook; References; Further Reading  
Chapter 3 Spectroscopic Advances in Organolithium Reactivity: The Contribution of Rapid-Injection NMR (RINMR) 3.1 Introduction; 3.2 The Curtin-Hammett Principle; 3.3 Organolithium NMR; 3.4 Features of RINMR; 3.4.1 Brief History; 3.4.2 Apparatus Descriptions and Rapidity of Acquisition; 3.4.3 Temperature Range and Control; 3.4.4 Volume Accuracy of Injection; 3.5 Use of RINMR to Study Organometallic Reactions; 3.5.1 n-Butyllithium Aggregate Reactivity (1985); 3.5.2 Magnesium Chelates in Carbonyl Additions (1987/1990); 3.5.3 Lithium Enolate Aldol (1992)  
3.5.4 Alkyl lithium Polymerization (1995/1999) 3.5.5 Tin Transmetalation (2007); 3.5.6 Cuprates (2002-Present); 3.5.7 n-BuLi Aggregate Reactivity Revisited (2007); 3.5.8 Tris(trimethylsilyl)methyl lithium (2008/2009); 3.5.9 Enolization and Lithium Aldol (2011); 3.6 Conclusion and Outlook; References; Further Reading; Chapter 4 Spectroscopic Advances in Structural Lithium Chemistry: Diffusion-Ordered Spectroscopy and Solid-State NMR; 4.1 General Introduction; 4.2 Application of Solution NMR to the Structural Characterization of Organolithium Compounds; 4.2.1 Diffusion NMR Measurement Methods  
4.2.1.1 Pulsed Field Gradient Spin Echo (PFGSE) 4.2.1.2 From the First to the Second Dimension: DOSY NMR Experiment; 4.2.2 DOSY Application to the Structural Analysis of Organolithium Compounds; 4.2.2.1 Structure of the Mixed Methyl lithium/Lithium Chloride Aggregate; 4.2.2.2 Structure of a Lithium Phosphido-Borane; 4.2.2.3 Structure of Lithium Zincate; 4.2.3 Conclusion; 4.3 Solid-State NMR; 4.3.1 Basic Principles; 4.3.1.1 Homo and Heteronuclear Dipole-Dipole Couplings (D: Dipole-Dipole); 4.3.1.2 Chemical Shift Anisotropy (CSA); 4.3.1.3 Quadrupolar Interactions for Nuclei with  $I < 1/2$  (Q) 4.3.1.4 Magic Angle Spinning (MAS)

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### Sommario/riassunto

This unique book covers fundamentals of organolithium compounds and gives a comprehensive overview of the latest synthetic advances and developments in the field. Part I covers computational and spectroscopic aspects as well as structure-reactivity relationships of organolithiums, whereas Part II deals with new lithium-based synthetic methodologies as well as novel synthetic applications of functionalized lithium compounds. A useful resource for newcomers and active researchers involved in organic synthesis, whether working in academia or industry!

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