

1. Record Nr.	UNINA9911019529603321
Titolo	Superacid chemistry // George A. Olah ... [et al.]
Pubbl/distr/stampa	Hoboken, N.J., : Wiley, c2009
ISBN	97866121113000 9781282113008 1282113003 9780470421604 0470421606 9780470421543 0470421541
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (872 p.)
Altri autori (Persone)	OlahGeorge A <1927-> (George Andrew)
Disciplina	546/.24
Soggetti	Superacids
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Rev. ed. of: Superacids / George A. Olah, G.K. Surya Prakash, Jean Sommer. c1985.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	SUPERACID CHEMISTRY; CONTENTS; Preface to the Second Edition; Preface to the First Edition; 1. General Aspects; 1.1. Defining Acidity; 1.1.1. Acids and Bases; 1.1.2. The pH Scale; 1.1.3. Acidity Functions; 1.2. Definition of Superacids; 1.2.1. Range of Acidities; 1.3. Types of Superacids; 1.3.1. Primary Superacids; 1.3.2. Binary Superacids; 1.3.3. Ternary Superacids; 1.3.4. Solid Superacids; 1.4. Experimental Techniques for Acidity Measurements (Protic Acids); 1.4.1. Spectrophotometric Method; 1.4.2. Nuclear Magnetic Resonance Methods; 1.4.2.1. Chemical Shift Measurements 1.4.2.2. Exchange Rate Measurements Based on Line-Shape Analysis (DNMR: Dynamic Nuclear Magnetic Resonance)1.4.3. Electrochemical Methods; 1.4.4. Chemical Kinetics; 1.4.5. Heats of Protonation of Weak Bases; 1.4.6. Theoretical Calculations and Superacidity in the Gas Phase; 1.4.7. Estimating the Strength of Lewis Acids; 1.4.8. Experimental Techniques Applied to Solid Acids; References; 2. Superacid Systems; 2.1. Primary Superacids; 2.1.1. Brønsted Superacids; 2.1.1.1 Perchloric Acid; 2.1.1.2. Chlorosulfuric Acid;

2.1.1.3. Fluorosulfuric Acid; 2.1.1.4. Perfluoroalkanesulfonic Acids
 2.1.1.5. Hydrogen Fluoride 2.1.1.6. Carborane Superacids $H(CB(11)HR(5)X(6))$; 2.1.2. Lewis Superacids; 2.1.2.1. Antimony Pentafluoride;
 2.1.2.2. Arsenic Pentafluoride; 2.1.2.3. Phosphorus Pentafluoride;
 2.1.2.4. Tantalum and Niobium Pentafluoride; 2.1.2.5. Boron Trifluoride; 2.1.2.6. Tris(pentafluorophenyl) Borane; 2.1.2.7. Boron Tris(trifluoromethanesulfonate); 2.1.2.8. Aprotic Organic Superacids (Vol'pin's Systems); 2.2. Binary Superacids; 2.2.1. Binary Brønsted Superacids; 2.2.1.1. Hydrogen Fluoride-Fluorosulfuric Acid; 2.2.1.2. Hydrogen Fluoride-Trifluoromethanesulfonic Acid
 2.2.1.3. Tetra(Hydrogen Sulfato)Boric Acid-Sulfuric Acid 2.2.2. Conjugate Brønsted-Lewis Superacids; 2.2.2.1. Oleums-Polysulfuric Acids; 2.2.2.2. Fluorosulfuric Acid-Antimony Pentafluoride ("Magic Acid"); 2.2.2.3. Fluorosulfuric Acid-Sulfur Trioxide; 2.2.2.4. $HSO(3)F-MF(n)(SO(3)F)(5-n)$; $n = 3, 4$, $M = Nb, Ta$; 2.2.2.5. Fluorosulfuric Acid-Arsenic Pentafluoride; 2.2.2.6. Perfluoroalkanesulfonic Acid-Based Systems; 2.2.2.7. Hydrogen Fluoride-Antimony Pentafluoride (Fluoroantimonic Acid); 2.2.2.8. Hydrogen Fluoride- Phosphorus Pentafluoride; 2.2.2.9. Hydrogen Fluoride-Tantalum Pentafluoride
 2.2.2.10. Hydrogen Fluoride-Boron Trifluoride (Tetrafluoroboric Acid)
 2.2.2.11. Conjugate Friedel-Crafts Acids ($HX-AlX(3)$, etc.); 2.3. Ternary Superacids; 2.3.1. $HSO(3)F-HF-SbF(5)$; 2.3.2. $HSO(3)F-HF-CF(3)SO(3)H$; 2.3.3. $CF(3)SO(3)H-HF$ -Lewis Acid; 2.3.4. $HSO(3)F-SbF(5)-SO(3)$; 2.4. Solid Superacids; 2.4.1. Zeolitic Acids; 2.4.2. Polymeric Resin Sulfonic Acids; 2.4.2.1. Lewis Acid-Complexed Sulfonic Acid Resins; 2.4.2.2. Perfluorinated Polymer Resin Acids; 2.4.3. Enhanced Acidity Solids; 2.4.3.1. Brønsted Acid-Modified Metal Oxides: $TiO(2)-H(2)SO(4)$; $ZrO(2)-H(2)SO(4)$
 2.4.3.2. Lewis Acid-Modified Metal Oxides and Mixed Oxides

Sommario/riassunto

The chemistry of superacids has developed in the last two decades into a field of growing interest and importance. Now available in a new expanded second edition, this definitive work on superacids offers a comprehensive review of superacids and discusses the development of new superacid systems and applications of superacids in the promotion of unusual reactions. Covering Brønsted and Lewis superacids, solid superacids, carbocations, heterocations, and catalyzed reactions, this timely volume is invaluable to professionals, faculty, and graduate students in organic, inorganic, and physical chemistry.