

1. Record Nr.	UNINA9910830353303321
Titolo	Functionalized inorganic fluorides [[electronic resource]] : synthesis, characterization & properties of nanostructured solids // edited by Alain Tressaud
Pubbl/distr/stampa	Hoboken, NJ, : Wiley, 2010
ISBN	1-282-68579-1 9786612685798 0-470-66076-7 0-470-66075-9
Descrizione fisica	1 online resource (617 p.)
Altri autori (Persone)	TressaudAlain
Disciplina	546.731 546/.731
Soggetti	Fluorides Fluorine compounds
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	Functionalized Inorganic Fluorides; Contents; Preface; List of Contributors; 1 Sol-Gel Synthesis of Nano-Scaled Metal Fluorides - Mechanism and Properties; 1.1 Introduction; 1.1.1 Sol-Gel Syntheses of Oxides - An Intensively Studied and Widely Used Process; 1.1.2 Sol-Gel Syntheses of Metal Fluorides - Overview of Methods; 1.2 Fluorolytic Sol-Gel Synthesis; 1.2.1 Mechanism and Properties; 1.2.2 Insight into Mechanism by Analytical Methods; 1.2.3 Exploring Properties; 1.2.4 Possible Fields of Application; References; 2 Microwave-Assisted Route Towards Fluorinated Nanomaterials; 2.1 Introduction 2.2 Introduction to Microwave Synthesis2.2.1 A Brief History; 2.2.2 Mechanisms to Generate Heat; 2.2.3 Advantages of Microwave Synthesis; 2.2.4 Examples of Microwave Experiments; 2.3 Preparation of Nanosized Metal Fluorides; 2.3.1 Aluminium-based Fluoride Materials; 2.3.2 Microwave-assisted Synthesis of Transition Metal Oxy-Hydroxy-Fluorides; 2.4 Concluding Remarks; Acknowledgements; References; 3 High Surface Area Metal Fluorides as Catalysts; 3.1 Introduction; 3.2 High Surface Area Aluminium Fluoride as Catalyst; 3.3

Host-Guest Metal Fluoride Systems

3.4 Hydroxy(oxo)fluorides as Bi-acidic Catalysts 3.5 Oxidation Catalysis;

3.6 Metal Fluoride Supported Noble Metal Catalysts; 3.6.1

Hydrodechlorination of Monochlorodifluoromethane; 3.6.2

Hydrodechlorination of Dichloroacetic Acid (DCA); 3.6.3 Suzuki

Coupling; References; 4 Investigation of Surface Acidity using a Range

of Probe Molecules; 4.1 Introduction; 4.1.1 Setting the Scene: Metal

Fluorides versus Metal Oxides; 4.1.2 Some Examples of the Application

of FTIR Spectroscopy to the Study of Surface Acidity in Metal Oxides;

4.1.3 A Preview

4.2 Characterization of Acidity on a Surface: Contrasts with Molecular

Fluorides 4.2.1 Molecular Brnsted and Molecular Lewis Acids; 4.2.2 A

Possible Benchmark for Solid Metal Fluoride, Lewis Acids: Aluminium

Chlorofluoride; 4.3 Experimental Methodology; 4.3.1 FTIR

Spectroscopy; 4.3.2 Characteristic Reactions and the Detection of

Adsorbed Species by a Radiotracer Method; 4.4 Experimental Studies of

Surface Acidity; 4.4.1 Using FTIR Spectroscopy; 4.4.2 Using HCl as a

Probe with Detection via [³⁶Cl]-Labelling

4.4.3 Metal Fluoride Surfaces that Contain Surface Hydroxyl Groups:

Aluminium Hydroxy Fluorides with the Hexagonal Tungsten Bronze

Structure 4.4.4 Possible Geometries for HCl Adsorbed at Metal Fluoride

Surfaces: Relation to Oxide and Oxyfluoride Surfaces; 4.5 Conclusions;

References; 5 Probing Short and Medium Range Order in Al-based

Fluorides using High Resolution Solid State Nuclear Magnetic

Resonance and Parameter Modelling; 5.1 Introduction; 5.2 High

Resolution NMR Techniques; 5.2.1 Fast MAS and High Magnetic Field;

5.2.2 ²⁷Al NMR; 5.2.3 High Resolution Correlation NMR Techniques

5.3 Application to Functionalized Al-Based Fluorides with Catalytic

Properties

Sommario/riassunto

Functionalized Inorganic Fluorides: Synthesis, Characterization & Properties of Nanostructured Solids covers several classes of nanostructured and functionalized inorganic fluorides, oxide-fluorides, and fluorinated oxides such as silica and alumina. Ranging from powders or glass-ceramics to thin layers and coatings, they have applications as more efficient and less aggressive catalysts, UV absorbers, planar optical waveguides, integrated lasers and optical amplifiers, luminescent materials, anti-reflective coatings and high T_c superconductors. With a focus on new types