

1. Record Nr.	UNINA9911006862703321
Autore	Byrappa K
Titolo	Handbook of hydrothermal technology : a technology for crystal growth and materials processing / / by K. Byrappa and Masahiro Yoshimura
Pubbl/distr/stampa	Norwich, N.Y., : Noyes Publications, c2001
ISBN	1-282-00270-8 9786612002700 1-59124-276-2
Descrizione fisica	1 online resource (897 p.)
Altri autori (Persone)	YoshimuraMasahiro <1942->
Disciplina	548/.5 21 621.402
Soggetti	Crystallization Crystal growth
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	Front Cover; Handbook of Hydrothermal Technology: A Technology for Crystal Growth and Materials Processing; Copyright Page; Preface; Contents; Chapter 1. Hydrothermal Technology-Principles and Applications; 1.1 INTRODUCTION; 1.2 DEFINITION; 1.3 MINERALIZERS; 1.4 NATURAL HYDROTHERMAL SYSTEMS; 1.5 THE BEHAVIOR OF VOLATILES AND OTHER INCOMPATIBLE COMPONENTS UNDER HYDROTHERMAL CONDITIONS; 1.6 SUBMARINE HYDROTHERMAL SYSTEMS; 1.7 HYDROTHERMAL CRYSTAL GROWTH AND MATERIALS PROCESSING; 1.8 STATISTICS OF PUBLICATIONS AND RESEARCH IN HYDROTHERMAL TECHNOLOGY; 1.9 HYDROTHERMAL MATERIALS PROCESSING REFERENCESChapter 2. History of Hydrothermal Technology; 2.1 INTRODUCTION; REFERENCES; Chapter 3. Apparatus; 3.1 INTRODUCTION; 3.2 SELECTION OF AUTOCLAVE AND AUTOCLAVE MATERIALS; 3.3 LINERS; 3.4 TEMPERATURE AND PRESSURE MEASUREMENTS; 3.5 AUTOCLAVES AND AUTOCLAVE DESIGNS; 3.6 SAFETY AND MAINTENANCE OF AUTOCLAVES; REFERENCES; Chapter 4. Physical Chemistry of Hydrothermal Growth of Crystals; 4.1 INTRODUCTION; 4.2 BASIC PRINCIPLES OF PHASE FORMATION UNDER

HYDROTHERMAL CONDITIONS; 4.3 SOLUTIONS, SOLUBILITY AND KINETICS OF CRYSTALLIZATION; 4.4 THERMODYNAMIC PRINCIPLES OF SOLUBILITY

4.5 KINETICS OF CRYSTALLIZATION UNDER HYDROTHERMAL CONDITIONS
REFERENCES; Chapter 5. Hydrothermal Growth of Some Selected Crystals; 5.1 QUARTZ; 5.2 GROWTH OF HIGH-QUALITY (AND DISLOCATION FREE) QUARTZ CRYSTALS; 5.3 BERLINITE; 5.4 GALLIUM PHOSPHATE, GaPO_4 ; 5.5 POTASSIUM TITANYL PHOSPHATE (KTP); 5.6 POTASSIUM TITANYL ARSENATE; 5.7 CALCITE; 5.8 HYDROXYAPATITE (HAp); REFERENCES; Chapter 6. Hydrothermal Synthesis and Growth of Zeolites; 6.1 INTRODUCTION; 6.2 MINERALOGY OF ZEOLITES; 6.3 CRYSTAL CHEMISTRY OF ZEOLITES; 6.4 COMPARISON BETWEEN NATURAL AND SYNTHETIC ZEOLITES; 6.5 SYNTHESIS OF ZEOLITES 6.6 CRYSTAL GROWTH 6.7 ALUMINOPHOSPHATE ZEOLITES; 6.8 GROWTH OF ZEOLITE THIN FILMS AND CRYSTALS AT INORGANIC/ORGANIC INTERFACES (PREPARATION OF ZEOLITE-BASED COMPOSITES); 6.9 APPLICATIONS OF ZEOLITES; 6.10 OXIDATIVE CATALYSIS ON ZEOLITES; REFERENCES; Chapter 7. Hydrothermal Synthesis and Growth of Coordinated Complex Crystals (Part I); 7.1 INTRODUCTION; 7.2 CRYSTAL CHEMICAL BACKGROUND; 7.3 RARE EARTH SILICATES; 7.4 PHASE FORMATION OF RARE EARTH SILICATES (IN AQUEOUS SOLVENTS); 7.5 CRYSTAL CHEMICAL SIGNIFICANCE OF PHASE FORMATION; 7.6 DEGREE OF SILIFICATION 7.7 PROPERTIES OF RARE EARTH SILICATES 7.8 SODIUM ZIRCONIUM SILICATES; 7.9 GROWTH OF SELECTED SILICATES; 7.10 HYDROTHERMAL GROWTH OF LITHIUM SILICATES; 7.11 HYDROTHERMAL GROWTH OF GERMANATES; 7.12 PROPERTIES OF GERMANATES; 7.13 HYDROTHERMAL GROWTH OF PHOSPHATES; 7.14 HYDROTHERMAL GROWTH OF MIXED VALENT METAL PHOSPHATES; 7.15 PROPERTIES OF RARE EARTH AND MIXED VALENT METAL PHOSPHATES; 7.16 HYDROTHERMAL SYNTHESIS OF VANADATES; 7.17 HYDROTHERMAL SYNTHESIS OF BORATES; REFERENCES
Chapter 8. Hydrothermal Synthesis and Crystal Growth of Fluorides, Sulfides, Tungstates, Molybdates, and Related Compounds

Sommario/riassunto

Quartz, zeolites, gemstones, perovskite type oxides, ferrite, carbon allotropes, complex coordinated compounds and many more all products now being produced using hydrothermal technology. Handbook of Hydrothermal Technology brings together the latest techniques in this rapidly advancing field in one exceptionally useful, long-needed volume. The handbook provides a single source for understanding how aqueous solvents or mineralizers work under temperature and pressure to dissolve and recrystallize normally insoluble materials, and decompose or recycle any waste material. The result, as
