INTERMETALLIC COMPOUNDS

Basic Mechanical Properties and Lattice Defects of Intermetallic Compounds

Edited by

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and

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Intermetallic Compounds Basic Mechanical Properties And Lattice Defects Of

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Intermetallic Compounds Basic Mechanical Properties And Lattice Defects Of:

Intermetallic Compounds: Basic mechanical properties and lattice defects of intermetallic compounds Jack Hall Westbrook,Robert Louis Fleischer,2000 **Mechanical Properties of Complex Intermetallics** Esther Belin-Ferr,2011 This book will be the last one in a series of 4 books issued yearly as a deliverable of the research school established within the European Network of Excellence CMA for Complex Metallic Alloys It is written by reputed experts in the fields of metal physics surface physics and chemistry metallurgy and process engineering combining expertise found inside as well as outside the network The CMA network focuses on the huge group of largely unknown multinary alloys and compounds formed with crystal structures based on giant unit cells containing clusters with many tens up to more than thousand atoms per unit cell In these phases for many phenomena the physical length scales are substantially smaller than the unit cell dimension Hence these materials offer unique combinations of properties which are mutually excluded in conventional materials metallic electric conductivity combined with low thermal conductivity combination of good light absorption with high temperature stability combination of high metallic hardness with reduced wetting by liquids electrical and thermal resistance tuneable by composition variation excellent resistance to corrosion reduced cold welding and adhesion enhanced hydrogen storage capacity and light absorption etc The series of books will concentrate on development of fundamental knowledge with the aim of understanding materials phenomena technologies associated with the production transformation and processing of knowledge based multifunctional materials surface engineering support for new materials development and new knowledge based higher performance materials for macro scale applications **Intermetallic Matrix Composites** Rahul Mitra,2017-05-25 Intermetallic Matrix Composites Properties and Applications is a comprehensive guide that studies the types and properties of intermetallic matrix composites including their processing techniques characterization and the various testing methods associated with these composites In addition it presents modeling techniques their strengthening mechanisms and the important area of failure and repair Advanced complex IMCs are then explained such as Self healing IMCs and laminated intermetallic composites The book concludes by delving into the industries that use these materials including the automotive industry Reviews the latest research in intermetallic matrix composites Contains a focus on properties and applications Includes contributions from leading experts in the field

Fundamentals of Creep in Metals and Alloys Michael E. Kassner,Maria-Teresa Perez-Prado,2004-04-06 Numerous line drawings with consistent format and units allow easy comparison of the behavior of a very wide range of materials Transmission electron micrographs provide a direct insight in the basic microstructure of metals deforming at high temperatures Extensive literature review of over 1000 references provide an excellent reference document and a very balanced discussionUnderstanding the strength of materials at a range of temperatures is critically important to a huge number of researchers and practitioners from a wide range of fields and industry sectors including metallurgists industrial

designers aerospace R D personnel and structural engineers The most up to date and comprehensive book in the field Fundamentals of Creep in Metals and Alloys discusses the fundamentals of time dependent plasticity or creep plasticity in metals alloys and metallic compounds This is the first book of its kind that provides broad coverage of a range of materials not just a sub group such as metallic compounds superalloys or crystals As such it presents the most balanced view of creep for all materials scientists The theory of all of these phenomena are extensively reviewed and analysed in view of an extensive bibliography that includes the most recent publications in the field All sections of the book have undergone extensive peer review and therefore the reader can be sure they have access to the most up to date research fully interrogated from the world s leading investigators Numerous line drawings with consistent format and units allow easy comparison of the behavior of a very wide range of materials Transmission electron micrographs provide a direct insight in the basic microstructure of metals deforming at high temperatures Extensive literature review of over 1000 references provide an excellent reference document and a very balanced discussion Physical Metallurgy and processing of Intermetallic Compounds N.S. Stoloff,V.K. Sikka,2012-12-06 The attractive physical and mechanical properties of ordered intermetallic alloys have been recognized since early in this century However periodic attempts to develop intermetallics for structural applications were unsuc cessful due in major part to the twin handicaps of inadequate low temper ature ductility or toughness together with poor elevated temperature creep strength The discovery in 1979 by Aoki and Izumi in Japan that small additions of boron caused a dramatic improvement in the ductility of Ni3Al was a major factor in launching a new wave of fundamental and applied research on intermetallics Another important factor was the issuance in 1984 of a National Materials Advisory Board reported entitled Structural Uses for Ductile Ordered Alloys which identified numerous potential defense related applications and proposed the launching of a coordinated development program to gather engineering property and processing data A substantial research effort on titanium aluminides was already underway at the Air Force Materials Laboratory at Wright Patterson Air Force Base in Ohio and with Air Force support at several industrial and university laboratories Smaller programs also were under way at Oak Ridge National Laboratory under Department of Energy sponsorship These research efforts were soon augmented in the United States by funding from Department of Defense agencies such as Office of Naval Research and Air Force Office of Scientific Research and by the National Science Foundation *Intermetallic Compounds, Magnetic, Electrical and Optical Properties and Applications of* J. H. Westbrook,R. L. Fleischer,2000-06-15 This volume is one of four each of which consists of reprinted chapters from the highly acclaimed comprehensive two volume set Intermetallic Compounds Principles and Practice published in 1995 In some cases the author or authors have added a brief addendum to bring their chapter up to date and in other cases more recent references have been added Chapters have been selected and grouped in subject areas to provide more easily accessible and user friendly volumes for individual researchers The other titles in this four volume set are Crystal Structures of Intermetallic Compounds

Basic Mechanical Properties and Lattice Defects of Intermetallic Compounds Structural Applications of Intermetallic Compounds **Apatites and their Synthetic Analogues** Petr Ptáček,2016-04-13 Apatite type minerals and their synthetic analogues are of interest of many industrial branches and scientific disciplines including material sciences chemical industry agriculture geology medicine and dentistry This book provides a basic overview of general knowledges of this topic in order to provide the comprehensive survey from a scientific and technological perspective The book is divided into 10 chapters which are devoted to the structure and properties of minerals from the supergroup of apatite experimental techniques of preparation and characterization of synthetic analogues of apatite minerals substitution in the structure of apatite as well as utilization of these materials in wide range of common and special advanced applications in industry material sciences and research Additionally the phosphate rocks their classification geological role mining and beneficiation of phosphate ore production of elemental phosphorus phosphoric acid and fertilizers are also described Although this book is meant for chemist material scientist and research engineers the individual chapters contain theoretical background historical aspects as well as examples of synthetic and analytical methods which may be also interesting for students and non expert readers as well **Intermetallic Compounds, Structural Applications of** J. H. Westbrook,R. L. Fleischer,2000-06-15 This volume is one of four each of which consists of reprinted chapters from the highly acclaimed comprehensive two volume set Intermetallic Compounds Principles and Practice published in 1995 In some cases the author or authors have added a brief addendum to bring their chapter up to date and in other cases more recent references have been added Chapters have been selected and grouped in subject areas to provide more easily accessible and user friendly volumes for individual researchers The other titles in this four volume set are Crystal Structures of Intermetallic Compounds Basic Mechanical Properties and Lattice Defects of Intermetallic Compounds Magnetic Electrical and Optical Properties and Applications of Intermetallic Compounds *Basic Research Resumés* ,1959 Effect of Basic Physical Parameters on Engineering Properties of Intermetallic Compounds D. L. Wood,Jack Hall Westbrook,1960 **Air Force Research Resumés** , **Opportunities for Postdoctoral Research in the Physical and Mathematical Sciences at the National Bureau of Standards, 1963-1964** United States. National Bureau of Standards,1962 **U.S. Government Research Reports** ,1963

Archaeometallurgy – Materials Science Aspects Andreas Hauptmann,2020-11-21 This book successfully connects archaeology and archaeometallurgy with geoscience and metallurgy It addresses topics concerning ore deposits archaeological field evidence of early metal production and basic chemical physical principles as well as experimental ethnographic works on a low handicraft base and artisanal metal production to help readers better understand what happened in antiquity The book is chiefly intended for scholars and students engaged in interdisciplinary work *Technical Abstract Bulletin* ,1964 **World Directory of Crystallographers** ,2013-11-11 **Intermetallic Compounds, Crystal Structures of** J. H. Westbrook,R. L. Fleischer,2000-06-15 An intermetallic compound is one consisting of two or more

metallic elements present in definite proportions in alloy They are used in a wide range of industries such as semiconductors and the aerospace industry Thousands of tons of the nickel aluminum alloy are used worldwide every year Hearings and Reports on Atomic Energy United States. Congress. Joint Committee on Atomic Energy,1975 *ERDA Authorizing Legislation, Fiscal Year 1976* United States. Congress. Joint Committee on Atomic Energy,1975 *ERDA Authorizing Legislation, Fiscal Year 1976: Physical research; Nuclear materials, March 4 and 6, 1975* United States. Congress. Joint Committee on Atomic Energy,1975

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Table of Contents Intermetallic Compounds Basic Mechanical Properties And Lattice Defects Of

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