

SOLID STATE PHYSICS LITERATURE GUIDES
Volume 2

SEMICONDUCTORS

Preparation, Crystal Growth, and
Selected Properties

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Clifford Lane



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Semiconductors T. F. Connolly, 2012-12-06 And often on request from the issuing installation USAEC reports are also available from International Atomic Energy Agency Kaerntnerring A 1010 Vienna Austria National Lending Library Boston Spa England Monographs and reports of the National Bureau 01 Standards are for sale by Superintendent of Documents U S Government Printing Office Washington D C 20402 Theses listed as Dissertation Abstracts number are available in North and South America from University Microfilms Dissertation Copies P O Box 1764 Ann Arbor Michigan 48106 and elsewhere from University Microfilms Ltd St John s Road Tylers Green Penn Buckinghamshire England Conlenls Addendum xiii 1 Information Centers and Other Services 1 2 Journals 3 3 Methods of Crystal Growth Books and Reviews 5 4 Semiconductors General Reviews and Bibliographies 11 5 1 V VI Compounds 21 6 li IV V2 Compounds 23 7 II V Compounds 29 a General Reviews and Bibliographies 29 b Zinc Compounds 30 1 Zn3P2 30 2 ZnAs 30 3 ZnSb 30 4 Zn Mixed Systems 31 c Cadmium Compounds 31 31 1 Cd3P2 2 Cd3As2 31 3 CdSb Cd3Sb2 33 37 8 li VI Compounds a General Reviews and Bibliographies 37 b Zinc Compounds 39 1 ZnO 39 Preparation and Properties 39 Electrical Properties 41 Optical Properties 45 Physical Properties and Structure 47 2 ZnS 49 3 ZnSe 52 4 ZnTe 54 5 Zn Mixed Systems 55 55 c Cadmium Compounds 55 1 CdS 2 CdSe 60 3 CdTe 61 4 CdTernaries 62 d Mercury Compounds 64 Semiconductors T. F. Connolly, 1972-05-01 Selected Data Resources - Physical Sciences/engineering , 1980 **Electrical Properties of Solids** T. F. Connolly, 2012-12-06 Since 1963 the Research Materials Information Center has been answering inquiries on the availability preparation and properties of ultrapure inorganic research specimens It has been possible to do this with reasonable efficiency by searching an automated coded microfilm collection of the report and open literature and of data sheets and question naires provided by commercial and research producers of pure materials With the growth of the collection to over 70 000 documents and the increase in the demand for more general background information it has been necessary to compile bibliographies on an increasing variety of subjects These have been used as indexes to the microfilmed documents for more efficient searching and in the past distributed in response to individual requests However their size and number no longer permit so casual and uneconomic a method of distribution The ORNL Solid State Physics Literature Guides is a practical alternative Organization The subject organization of the bibliography is given by the Table of Contents Each section is preceded by a collection of reviews bibliographies and general papers i e those dealing with methods or equipment rather than single materials or with such a wide variety of materials that no subsection was appropriate Coverage is generally from 1960 to mid 1970 Emphasis is on inorganic materials Crystal Growth Bibliography A. M. Keesee, 2012-11-29 Man s first experience with the ordered state of matter to which we now apply the generic term crystals came about when he found specimens of some of the natural crystalline mineral substances that are re latively common in the surface and near surface areas of the earth s crust His first widespread use of these natural materials in which their crystalline nature was of importance was undoubtedly in fabricating

jewelry and otherwise adorning his weapons tools and household items Both the Old and New Testaments of the Bible document the use of crystalline gems and the Romans are credited with first employing diamonds a metastable crystalline form of carbon in jewelry Various civilizations appear to have ascribed magical powers to some natural crystals and they are known to have been widely accepted in Europe as having medicinal properties during the Middle Ages Given early man's appreciation of the symmetry and beauty of natural crystals it is not surprising that his earliest interest in working with these materials appears to have been directed toward techniques for duplicating or manufacturing these substances that were so highly valued as gems Although the exact beginning of the science that we now know as crystal growth cannot be precisely specified we do know that Robert Boyle had attempted to grow crystals that could be used as gems prior to 1672 Much later in 1873 M A

Scattering of Thermal Neutrons Andre Larose, 2012-12-06 Solid state physicists have long appreciated the usefulness of thermal neutron scattering in the investigation of condensed matter This technique was first made possible by the advent of the nuclear reactor and has since then undergone many refinements The developments in this field of research have we felt necessitated the making of a comprehensive compilation of the published thermal neutron papers The large number of titles collected in this book as well as their diversity and their yearly distribution reflects the continued contribution of the neutron probe to our understanding of physical systems This bibliography is an updated and improved version of the one first published by us in March of 1973 under a similar title Many of the omissions and inconsistencies of the first edition such as occurred for example in the initialing of authors names have been corrected The literature search has been carried back to 1932 the year when the existence of the neutron was experimentally confirmed Several additional journals have also been searched and brought up to date together with those listed in our first publication The number of entries is now 8543 an increase of 65 per cent relative to the first edition

Groups IV, V, and VI Transition Metals and Compounds T. F. Connolly, 2012-12-06 responsibility To Betty Edwards and Emily Copenhaver my thanks for what must have seemed endless typing retyping and correcting of these bibliographies over a span of years Availability of Documents U S Government contractor reports usually identified by an alpha numeric report number can be purchased from National Technical Information Service U S Department of Commerce Springfield Virginia 22151 and often on request from the issuing installation USAEC reports are also available from International Atomic Energy Agency Kaerntnerring A 1010 Vienna Austria National Lending Library Boston Spa England Monographs and reports of the National Bureau of Standards are for sale by Superintendent of Documents U S Government Printing Office Washington D C 20402 Theses listed as Dissertation Abstracts number are available in North or South America from University Microfilms Dissertation Copies P O Box 1764 Ann Arbor Michigan 48106 and elsewhere from University Microfilms Ltd St John's Road Tylers Green Penn Buckinghamshire England Other Information Centers and New Journals New journals Information centers Field and and other sources serials Ultra purification 4 8 11 13 15 16 19 20 9 11 15 24 31 32 and 21 28 30 32 33 42 58 59 crystal growth ix Preface Field

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 11 15 17 21 26 28 30 31 32 33 35 24 25 28 29 30 31 37 38 39 40 42 46 53 56 32 58 60 61 62 *Laser Window and Mirror*
Materials G. C. Battle, Tom Connolly, Anne M. Keese, 2012-12-06 Charles S Sahagian Chief Electromagnetic Materials
 Technology Branch Deputy for Electronic Technology Hanscom AFB MA 01731 I t should not be surprising that an event as
 significant as the discovery of the laser has had some con comitant impact on other areas of science and technology but the
 extent of the impact was grossly unpredicted Upon perusal of this bibliography devoted to the subject of laser window and
 mirror materials it becomes very apparent that the effect of the laser on materials R and as new frequencies improved
 tunability higher power and other charac teristics are achieved we can expect even greater demands and requirements on
 the materials com munity What are some of the highlights disclosec by this bibliography with regard to work already ac
 complished First one can note the extensive investigations into developing new materials while at the same time improving
 old ones Among the latter alkali halides for example have essentially had a rebirth I n the past five years more progress has
 been achieved in the chemical and structural perfec tion of this class of materials than in the entire preceding century Also
 carried along in the surge for improved laser materials have been the alkaline earth fluorides prime candidates for 3 to 5 J
 Lm ap plications chalcogenides semiconductors oxides and others **Materials Information Programs** Stephen A.
 Rossmassler, 1977 **Ferroelectrics Literature Index** T. F. Connolly, 2012-12-06 Research on ferroelectricity and
 ferroelectric materials started in 1920 with the discovery by Valasek that the variation of spontaneous polarization in
 Rochelle salt with sign and magnitude of an applied electric field traced a complete and reproducible hysteresis loop Activity
 in the field was sporadic until 1935 when Busch and co workers announced the observation of similar behavior in potassium
 dihydrogen phosphate and related compounds Progress thereafter continued at a modest level with the undertaking of some
 theoretical as well as further experimental studies In 1944 von Hippel and co workers discovered ferroelectricity in barium
 titanate The technological importance of ceramic barium titanate and other perovskites led to an upsurge of interest with
 many new ferroelectrics being identified in the following decade By 1967 about 2000 papers on various aspects of
 ferroelectricity had been published The bulk of this widely dispersed literature was concerned with the experimental
 measurement of dielectric crystallographic thermal electromechanical elastic optical and magnetic properties A critical and
 excellently organized cmpilation based on these data appeared in 1969 with the publica tion of Landolt Bornstein Volume
 111 3 This superb tabulation gave instant access to the results in the literature on nearly 450 pure substances and solid
 solutions of ferroelectric and antiferroelectric materials Continuing interest in ferroelectrics spurred by the growing
 importance of electrooptic crystals resulted in the publication of almost as many additional papers by the end of 1969 as had
 been surveyed in Landolt Bornstein **Nuclear Science Abstracts** , 1976 *Directory of Federally Supported Information*
Analysis Centers National Referral Center (U.S.), 1980 **Bibliography of Magnetic Materials and Tabulation of**

Magnetic Transition Temperatures T. F. Connolly, 2012-12-06 This referenced compilation of magnetic transition temperatures represents with the Addendum papers actually received by the RMIC through May 1972 and consists of two lists alphabetical by compounds one for Curie and one for Neel temperatures Where different values appeared in the literature for a single compound all are listed with separate references given for each There is no attempt at critical evaluation which except for a few well studied and well characterized materials would hardly be worth the effort All that one can say for most of the compounds is that for a given material with a certain or all too often uncertain history of preparation and treatment stoichiometry homogeneity and chemical or structural purity a magnetic transition was indicated at the temperatures listed Only when the reasons for different values are explicitly stated in the literature do they appear as brief comments in the body of the lists In order to include the most recent data and to eliminate the delay involved in recomposition of the lists an addendum is provided While this requires the perusal of two lists rather than one it does ensure that the compilation represents the entire RMIC collection at the moment of going to press The 2478 references are restricted to those papers specifying a Curie or Neel temperature and do not reflect the complete magnetics literature even for the materials listed *Directory of Federally Supported Information Analysis Centers, 1979* National Referral Center (U.S.), 1979 **Nuclear Power Reactor Instrumentation Systems Handbook** Joseph M. Harrer, James G. Beckerley, 1973

Crystal Growth Michael O'Donoghue, 1988

NBS Special Publication, 1976

Bibliography of Microwave

Optical Technology A. F. Harvey, 2012-12-06 Although microwaves and coherent optics being two of the largest and most useful branches of electrical engineering to emerge technologically are usually considered as distinct subjects many of the underlying fundamental principles scientific achievements and practical applications have common features Following the evolution of the initial principles and techniques during the closing decade of the last century microwave engineering has long matured to a stage of ready availability of components automation and accuracy of measurement economical manufacturing methods and application of sophisticated systems Further this development of electromagnetic phenomena having spatial and temporal coherence has based on several centuries of study and practice of noncoherent light in the last two decades reached the optical region Hence it is now practicable to consider a comprehensive treatment of these two fields division being made by subject matter rather than by the artificial distinctions of frequency and or wavelength ranges However a full text on the combined subjects would be very large and unwieldy and thus this Bibliography is presented in the hope that it will prove useful as a compact reference source to a large body of workers and by putting forward the latest scientific and technical advances stimulate a multi disciplinary approach The material of the book commences with the fundamentals of radiation and matter progressing through components and devices amplification and generation transmission reception and processing of information and methods of measurement to conclude with a wide range of applications **Techniques of Melt Crystallization** Gilbert J. Sloan, Andrew R. McGhie, 1988-01-18 Organic Solvents

Physical Properties and Methods of Purification Fourth Edition Volume II in the Techniques of Chemistry series Edited by Arnold Weissberger Edited by John A Riddick William B Bunger and Theodore K Sakano This fourth edition updates and expands the material of the 15 year old third edition Besides revising the physical properties of preparation techniques for previously noted solvents over 150 new solvents have been added many selected to complete groups of isomers and expand homologous series listed in the previous edition Several isomeric and homologous series are initiated here including the xylenols chlorinated toluenes xylenes picolines lutidines and silanes 1986 0 471 08467 0 1 325 pp Physical Methods of Chemistry Volume One Components of Scientific Instruments and Applications of Computers to Chemical Research Second Edition Edited by Bryant W Rossiter and John F Hamilton Now in a revised Second Edition the classic Physical Methods of Chemistry series is an independent 8 volume set which surveys the most prevalent methods of determining a wide variety of physical properties of matter Volume One presents general laboratory techniques common to many of the specific physical methods that are detailed in subsequent volumes An excellent new work that also serves as a resource of information on a spectrum of components tools and techniques that are often used but rarely treated comprehensively in one book 1986 0 471 08034 9 834 pp Volume Two Electrochemical Methods Second Edition Edited by Bryant W Rossiter and John F Hamilton Volume Two presents a thorough up to date survey of the applications of electrometric methods in chemical systems Following an introductory chapter on electrochemical theory common to all electroanalytical methods it provides information on the latest techniques especially those with broad applications including polarography 1986 0 471 08027 6 904 pp New Topics in Crystal Growth Research George V. Karas, 2006 Experimental and theoretical aspects of crystal growth and its applications e g in devices are within the scope of these new books Experimental and theoretical contributions are included in the following fields theory of nucleation and growth molecular kinetics and transport phenomena crystallisation in viscous media such as polymers and glasses crystal growth of metals minerals semiconductors superconductors magnetics inorganic organic and biological substances in bulk or as thin films molecular beam epitaxy chemical vapour deposition growth of III V and II VI and other semiconductors characterisation of single crystals by physical and chemical methods apparatus instrumentation and techniques for crystal growth and purification methods multi layer heterostructures and their characterisation with an emphasis on crystal growth and epitaxial aspects of electronic materials

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stretching exercises can help to relax the neck muscles and restore range of motion fig 13 14 5 strengthening and stabilizing the neck to regain maintain good posture your neck needs the support of neck shoulder and trunk musculature simple exercises done every day will build that essential support fig 15 16

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