



Optical Properties of Low Dimensional Silicon Structures

Edited by

**Daniel C. Bensahel, Leigh T. Canham and
Stephano Ossicini**

NATO ASI Series

Optical Properties Of Low Dimensional Silicon Structures

Pier Andrea Serra

Optical Properties Of Low Dimensional Silicon Structures:

Optical Properties of Low Dimensional Silicon Structures B. Bensahel, Leigh T. Canham, Stephano

Ossicini, 2012-12-06 The workshop on Optical Properties of Low Dimensional Silicon structures was held in Meylan France on March 1993. The workshop took place inside the facilities of France Telecom CNET. Around 45 leading scientists working on this rapidly moving field were in attendance. Principal support was provided by the Advanced Research Workshop Program of the North Atlantic Treaty Organisation NATO French Delegation à l'Armement and CNET gave also a small financial grant the organisational part being undertaken by the SEE and CNET. There is currently intense research activity worldwide devoted to the optical properties of low dimensional silicon structures. This follows the recent discovery of efficient visible photoluminescence PL from highly porous silicon. This workshop was intended to bring together all the leading European scientists and laboratories in order to reveal the state of the art and to open new research fields on this subject. A large number of invited talks took place 12 together with regular contributions 20. The speakers were asked to leave nearly 1/3 of the time to the discussion with the audience and that promoted both formal and informal discussions between the participants.

Linear and Nonlinear Optical Properties of Low-dimensional Structures on Vicinal Silicon (111) Surfaces

Julie Jacob, 2008 *Optical Properties of Low-dimensional Materials* Tetsuo Ogawa, Yoshihiko Kanemitsu, 1995 This book surveys recent experimental and theoretical studies on optical properties of low dimensional materials e.g. artificial crystals in zeolites 60 and its related compounds silicon nanostructures including porous Si II VI and III V semiconductor quantum structures and Pb based natural quantum well systems. The eight excellent detailed review articles are written by authorities on each field in Japan. All the materials introduced in this book yield new optical phenomena originating from their mesoscopic and low dimensional characters contributing to a new research field of condensed matter and optical physics.

Hopping And Related Phenomena 5 - Proceedings Of The 5th International Conference C J Adkins, Andrew R

Long, John A McInnes, 1994-02-07 The phenomenon of hopping in which a particle executes a series of jumps between discrete states has a fundamental role in a wide range of solid state transport phenomena. In these proceedings acknowledged experts in the field describe important recent progress in developing the phenomenology of hopping processes and applying it to different systems including crystalline and amorphous semiconductors, glasses, polymers, mesoscopic conductors and high temperature superconductors.

Frontiers of Nano-Optoelectronic Systems Lorenzo Pavesi, Eugenia V.

Buzaneva, 2012-12-06 Since their discovery low dimensional materials have never stopped to intrigue scientists whether they are physicists, chemists or biochemists. Investigations of their nature and functions have always been and still are numerous and as soon as a solution is found for a given question another one is raised. The coupling of nano materials with photonics i.e. nano photonics has produced a boiling pot of ideas, problems, discovery and applications. This statement is abundantly illustrated in the present book. The interest in nano optoelectronic materials and systems is very widespread what gives a

really international and multicultural flavour to nano optoelectronic meetings One of them was organized by our self in May 2000 in Kiev as a NATO Advanced Research Workshop and EC Spring School The arrival of the new millennium provides an obvious transition point at which many aspects of nano science and nano engineering of nano photonic systems can be assessed with respect to the research progresses made in the pre ceding decades and to the challenges that lie ahead in the coming decades This book was planed to mark this with the objective of presenting a collection of papers from experts which provide broad perspectives on the state of the art in the various disciplines of nano science and nano engineering and on the directions for future research **Biosensors** Pier Andrea Serra,2011-07-18 A biosensor is a detecting device that combines a transducer with a biologically sensitive and selective component Biosensors can measure compounds present in the environment chemical processes food and human body at low cost if compared with traditional analytical techniques This book covers a wide range of aspects and issues related to biosensor technology bringing together researchers from 19 different countries The book consists of 27 chapters written by 106 authors and divided in three sections Biosensors Technology and Materials Biosensors for Health and Biosensors for Environment and Biosecurity

Advances in Electrochemical Science and Engineering ,2008-11-21 This series formerly edited by Heinz Gerischer and Charls V Tobias now edited by Richard C Alkire and Dieter M Kolb has been warmly welcomed by scientists world wide which is reflected in the reviews of the previous volumes This is an essential book for researchers in electrochemistry it covers areas of both fundamental and practical importance with reviews of high quality The material is very well presented and the choice of topics reflects a balanced editorial policy that is welcomed The Analyst All the contributions in this volume are well up to the standard of this excellent series and will be of great value to electrochemists The editors again deserve to be congratulated on this fine collection of reviews **Journal of Electroanalytical Chemistry and Interfacial Chemistry** competently and clearly written **Berichte der Bunsen Gesellschaft f r Physikalische Chemie** **Theory of the Optical Properties of Low Dimensional Semiconductor Structures** Aaron Neil Forshaw,1996 **Optical Properties of Low Dimensional Semiconductor Structures** Martin Moran,1997

Progress in Optics ,2013-08-08 In the 50 years since the first volume of Progress in Optics was published optics has become one of the most dynamic fields of science The volumes in this series that have appeared up to now contain more than 300 review articles by distinguished research workers which have become permanent records for many important developments helping optical scientists and optical engineers stay abreast of their fields Comprehensive in depth reviews Edited by the leading authority in the field **Microcrystalline and Nanocrystalline Semiconductors: Volume 358** Materials Research Society. Meeting Symposium F.,1995-04-03 The MRS Symposium Proceeding series is an internationally recognised reference suitable for researchers and practitioners **The Chemical Physics of Fullerenes 10 (and 5) Years Later** W. Andreoni,1996-03-31 A decade has elapsed since the discovery of C60 in molecular beams and five years since the first synthesis of solid C60 At the time the opening of a new era for chemistry was

foreseen and high expectations were shared by physicists and material scientists Where are we now Where are we aiming What can we expect from now on The answer will be found in this volume written by the protagonists of the fullerene adventure There is a whole new generation of materials now in the form of molecules solids nanostructures either directly derived from Bucky or inspired by it They continue to create new challenges to our fundamental understanding and seem to be ready for important long lasting applications Audience The book is mainly directed to specialized scientists physicists chemists material scientists and biochemists who will find it a source of learning and inspiration Younger researchers too will find it fascinating since it allows them to learn about and quickly acquire a critical view of an interdisciplinary frontier subject *Porous Silicon and Related Materials* Roland Hérino,Walter Lang,1995 These proceedings discuss developments in the field of porous silicon Experimental techniques such as acoustic microscopy low temperature photoconductivity and magnetic resonance are applied

Light Emitting Silicon for Microphotonics Stefano Ossicini,Lorenzo

Pavesi,Francesco Priolo,2003-11-12 A fascinating insight into the state of the art in silicon microphotonics and on what we can expect in the near future The book presents an overview of the current understanding of getting light from silicon It concentrates mainly on low dimensional silicon structures like quantum dots wires and wells but covers also alternative approaches like porous silicon and the doping of silicon with rare earths The emphasis is on the experimental and theoretical achievements concerning the optoelectronic properties of confined silicon structures obtained during recent years Silicon based photonic crystals are in particular considered An in depth discussion of the route towards a silicon laser is presented

Physical Concepts and Materials for Novel Optoelectronic Device Applications II Fabio Beltram,Erich Gornik,1993

Kokuritsu Kokkai Toshokan shozō kagaku gijutsu kankei Ōbun kaigiroku mokuroku Kokuritsu Kokkai Toshokan

(Japan),1997 日本国際会議発表論文集 ,1997 JJAP ,1998 New Developments in Porous Silicon: Relation with Other Nanostructured Porous Materials European Materials Research Society. Meeting,1997-12-18 The symposium entitled New Developments in Porous Silicon Relation with Other Nanostructured Porous Materials took place in Strasbourg on 4 7 June 1996 hosted by the EMRS Society Its objectives were to assess the recent developments in porous silicon research and make the porous Si community more aware of related porous materials The 71 papers contained in these proceedings account for about 80% of the work presented at the meeting and cover nine different topic areas Chapter 1 focuses on some recent advances in porous Si fabrication and a new formation mechanism involving specific point defects extensions to the basic anodization process for preparing macropore arrays multilayers as well as both thin and thick high porosity layers and the realisation of luminescent porous structures from device quality Si H material Controlled chemical modification of the internal surface of porous Si an important emerging technique for both stabilising understanding and introducing new functionality into the properties of the material is discussed in chapter 2 along with the new and exciting developments taking place in the nanocomposites area The papers in chapter 3 discuss photochemical effects properties of wet and dry

porous Si layers and new approaches to characterising wet material along with an important highlight of the symposium blue emission in oxide free layers Chapter 4 covers many new developments and the refining of existing techniques regarding characterising porous Si and chapter 5 reviews the luminescent silicon nanostructures that have been fabricated other than anodization The presentation of various porous materials and overviews on the fabrication characterisation and applications of porous alumina are covered in chapter 6 and chapter 7 focuses on the growing interest in porous Si multilayer structures and the potential for realising practical SiLEDs with chapter 8 covering the work that has been presented in this field New applications for porous Si materials which has an enormous world wide interest is discussed in the final chapter of the proceedings **Annual Report of Tokyo University of Agriculture and Technology** Tōkyō Nōkō Daigaku,1994

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