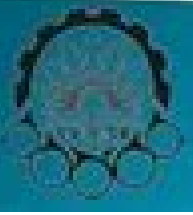
Light Emission From Silicon



Light Emission From Silicon

Anthony S. Fauci

Light Emission From Silicon:

Light Emission from Silicon Jean-Claude Vial,1993 **Light Emission from Silicon** Aldo Ferrari,1997 This volume presents the most recent results concerning the various approaches to obtaining light emission from silicon **Light emission from silicon** Jean Claude Vial,Leigh T. Canham,Walter Lang,1993 **From Physics to Devices: Light Emissions in Silicon** ,1997-11-14 Since its inception in 1966 the series of numbered volumes known as Semiconductors and Semimetals has distinguished itself through the careful selection of well known authors editors and contributors TheWillardson and BeerSeries as it is widely known has succeeded in publishing numerous landmark volumes and chapters Not only did many of these volumes make an impact at the time of their publication but they continue to be well cited years after their original release Recently Professor Eicke R Weber of the University of California at Berkeley joined as a co editor of the series Professor Weber a well known expert in the field of semiconductor materials will further contribute to continuing the series tradition of publishing timely highly relevant and long impacting volumes Some of the recent volumes such as Hydrogen in Semiconductors Imperfections in III V Materials Epitaxial Microstructures High Speed Heterostructure Devices Oxygen in Silicon and others promise indeed that this tradition will be maintained and even expanded Reflecting the truly interdisciplinary nature of the field that the series covers the volumes in Semiconductors and Semimetals have been and will continue to be of great interest to physicists chemists materials scientists and device engineers in modern industry

Light Emission From Silicon A. Ferrari, **Light Emission from Silicon-based Materials** Alexei Malinin,2001

Semiconductors and Semimetals Robert K. Willardson,Albert C. Beer,1966 Semiconductors and Semimetals Robert K. Willardson,Albert C. Beer,1966 **Light Emission from Silicon, Progress Towards Si-based Optoelectronics** J. Linnros,F. Priolo,L. Canham,European Materials Research Society,1998 **Semiconductor Silicon 1994** Howard R. Huff,1994 *Light Emission from Silicon* ,1997 This volume presents the most recent results concerning the various approaches to obtaining light emission from silicon This dream of silicon technologists is inspired by the fact that an efficient and stable silicon light emitting device would open the way to the production of monolithic optoelectronic integrated circuits that were based entirely upon silicon In fact some of the main building blocks of optoelectronic devices such as waveguides and photodetectors have already been developed by using silicon technology The above possibility would sharply reduce the price of optoelectronic circuits as compared with hybrid ones Recent worldwide effort on this subject has been far reaching industry is now focused on this goal as well and is starting to invest in research on this intriguing subject 1 Electroluminescent Devices 2 Light Detection 3 Sensors 4 Erbium Doped Structures 5 Material Characterization 6 Theory

Processes of Efficient Visible Light Emission in Silicon Nanostructures Michael John Estes,1995 Light Emission from Porous Silicon S. Gardelis,B. Hamilton,University of Manchester Institute of Science and Technology. Physics,1993 **Light Emission from Porous Silicon** Anne Suet Lin Chong,1999 **Nonlinear Optics in Semiconductors I** ,1998-10-22 Since

its inception in 1966 the series of numbered volumes known as Semiconductors and Semimetals has distinguished itself through the careful selection of well known authors editors and contributors The Willardson and Beer Series as it is widely known has succeeded in publishing numerous landmark volumes and chapters Not only did many of these volumes make an impact at the time of their publication but they continue to be well cited years after their original release Recently Professor Eicke R Weber of the University of California at Berkeley joined as a co editor of the series Professor Weber a well known expert in the field of semiconductor materials will further contribute to continuing the series tradition of publishing timely highly relevant and long impacting volumes Some of the recent volumes such as Hydrogen in Semiconductors Imperfections in III V Materials Epitaxial Microstructures High Speed Heterostructure Devices Oxygen in Silicon and others promise that this tradition will be maintained and even expanded Reflecting the truly interdisciplinary nature of the field that the series covers the volumes in Semiconductors and Semimetals have been and will continue to be of great interest to physicists chemists materials scientists and device engineers in modern industry **Light Emission from Silicon** Subramanian S. Iyer,Reuben T. Collins,Leigh T. Canham,1992 *Light Emission from Porous Silicon and Related Materials* Yoshihiko Kanemitsu,1995 **Light Emission from Silicon** Jean-Claude Vial,Leigh T. Canham,Walter Lang,1994 An important characteristic of the scientific activity surrounding the light emission from silicon is its ability to progress quickly in many different directions and to open new questions as soon as it is tried to answer others Researchers have now the choice between different and concurrent explanations of the visible light emission The characterisation of the material and optical properties are more and more advanced New silicon structures show similar properties Abinitio calculations are able to handle some aspects of the light emission The application of porous silicon for electro optical devices also shows progress the efficiency of electroluminescence has been enhanced and it can be tuned continuously over the whole visible range the photoluminesence can be modulated by an external voltage etc All these aspects and numerous others are presented in this book **Light Emission from Silicon** Frederick J. Seiferth,1994 The electrochemical etching of crystalline silicon in hydrofluoric acid based solutions has been found to produce a porous layer termed porous silicon PS which is found to exhibit photoluminescence PL and electroluminescence EL in the visible region While the luminescence mechanism is the subject of much debate the potential for this material is enormous as it could usher in a new generation of silicon based optoelectronic devices An electrolytic cell capable of producing luminescent layers of porous silicon over large area silicon wafers has been designed and fabricated The stability of the PL of PS after subjection to standard microelectronic processing steps namely thermal oxidation ion implantation and reactive ion etching has been investigated Changes in the PL intensity as well as shifts in the PL wavelengths observed after processing support the quantum confinement and surface states theories for the luminescence These results also support the possibility of integrating PS into standard silicon integrated circuit processing For the study of EL Au PS Schottky ITO PS heterojunction and PS pn junction diodes have been fabricated

EL efficiencies in the range of 10 5 to 107 have been determined for these devices The diodes typically exhibit extremely high series resistance and ideality factor values These results are direct consequences of the large non planar surface area of PS yielding poor electrical contacts and high surface state densities These factors need to be drastically improved to obtain efficient EL in PS devices A unique process capable of obtaining 5 u m wide lines of luminescent porous silicon in close proximity to device quality polished silicon is also presented Abstract Light Emission from Silicon, Progress Towards Si-based Optoelectronics Jan Linnros,Francesco Priolo,Leigh T. Canham,1999 This volume contains the papers presented at Symposium B of the 1998 spring meeting of the European Materials Research Society E MRS The symposium attracted well over 100 scientists engaged in one common goal that of developing efficient light emitting Si based structures This included various technical approaches such as porous silicon Si nanocrystals rare earth doping of Si light emitting silicides Si based multilayer and alloy structures and SiGe structures In this respect the meeting had a more multidisciplinary approach than previous meetings the main idea being a fruitful comparison of the different techniques that would also stimulate cross disciplinary research Generally presentations at the conference revealed high scientific quality and several new findings and refinements of existing techniques were disclosed One example was the much debated report of optical gain from a structure containing Si nanocrystals Another example was the dramatically improved stability of derivatised porous silicon The technique of producing porous Si microcavities has been refined such that cavities of high optical quality may now be fabricated The latest material to emerge as a candidate for a Si based light emitting device has been iron silicide and room temperature operation has been reported The interest is further motivated by the prospect of obtaining direct bandgap emission The 90 collected papers represent about 80% of the submitted papers out of more than 140 accepted abstracts The papers have been grouped according to subject although no ordering within each subgroup has been attempted All invited papers have been placed in the foremost section to serve as reviews in each separate field

Light Emission From Silicon Book Review: Unveiling the Magic of Language

In an electronic digital era where connections and knowledge reign supreme, the enchanting power of language has are more apparent than ever. Its capability to stir emotions, provoke thought, and instigate transformation is actually remarkable. This extraordinary book, aptly titled "**Light Emission From Silicon**," published by a highly acclaimed author, immerses readers in a captivating exploration of the significance of language and its profound affect our existence. Throughout this critique, we will delve into the book is central themes, evaluate its unique writing style, and assess its overall influence on its readership.

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