

# Free pdf Comsol optical waveguide simulation (Read Only)

Optical Waveguides and Devices Modeling and Visualization Using COMSOL Multiphysics Volume 2 Optical Waveguide Theory by the Finite Element Method Optical Waveguide Theory by the Finite Element Method Beam Propagation Method for Design of Optical Waveguide Devices Optical Waveguides and Devices Modeling and Visualization Using COMSOL Multiphysics Volume 1 Optical Waveguide Analysis Advanced Materials for Integrated Optical Waveguides Frontiers in Planar Lightwave Circuit Technology Electromagnetic Propagation and Waveguides in Photonics and Microwave Engineering Fundamentals of Optical Waveguides Introduction to Optical Waveguide Analysis Guided Wave Photonics Optical Waveguide Theory Optical Waveguide Modes: Polarization, Coupling and Symmetry An Introduction to Optical Waveguides Emerging Waveguide Technology Optical Polymer Waveguides Finite Element Methods for Nonlinear Optical Waveguides Optical Waveguides Physics and Simulation of Optoelectronic Devices XII. Guided Optics Electromagnetic and Photonic Simulation for the Beginner: Finite-Difference Frequency-Domain in MATLAB® Progress in Planar Optical Waveguides Theory of Dielectric Optical Waveguides Microwave and Optical Waveguide Analysis by the Finite Element Method Optical Waveguiding and Applied Photonics Arrayed Waveguide Gratings Arrayed Waveguide Gratings Design, Manufacturing, and Testing of Planar Optical Waveguide Devices Optical Fiber and Planar Waveguide Technology Optical Waveguide Modes Numerical Simulation of Optical Wave Propagation with Examples in MATLAB Physics and Simulation of Optoelectronic Devices XII. WDM Systems and Networks Optical Fibre Waveguide Analysis Optical Waveguide Concepts Inhomogeneous Optical Waveguides Frontiers in Planar Lightwave Circuit Technology Physics and Simulation of Optoelectronic Devices XII Investigation of Polymer Optical Waveguide Devices

## Optical Waveguides and Devices Modeling and Visualization Using COMSOL Multiphysics Volume 2

2018-10-20

this pictorial manuscript is a step by step graphical illustrations for waveguides and devices modeling and computational physics simulation using comsol multiphysics with ray optics wave optics and ac dc electrostatics modules all the example models investigated and visualized with the help of finite element analysis are referenced from the standard usa undergraduate text on optical guided waves and devices by richard syms and john cozens the simulations include the use of geometrical ray tracings for point source and full electromagnetic waves source employing the maxwell s wave equations for plane wave input both 2d and 3d simulation results will help in visualize the electromagnetic field propagating inside the waveguides and devices readers without fundamental handle on optics modeling are suggested to read the optics modeling and visualization with comsol multiphysics a step by step graphical instruction manuscripts for detailed discussion these models may be expanded to post graduate research and industrial photonics waveguides and devices development there are 46 chapters of different 2d and 3d optical waveguides devices structures modeled and simulated in volume 1 and 2 volume 1 models include 3d single mode optical fiber planar waveguide channel waveguide longitudinal and transverse phase modulator surface plasmon optical square waveguide tapered waveguide ftir beamsplitter in ray tracing and electromagnetic wave solvers full prism coupler halved prism coupler plano convex overlay lens overlay luneburg lens geodesic lens with control setup for resulted electric field comparison corrugated gratings transmission and reflection gratings chirped grating lens beam expander grating grating coupler chirped grating coupler buried channel waveguide volume 2 models continue with the ridge channel waveguide strip loaded channel waveguide gaas gaalas planar waveguide gaas gaalas heterostructure waveguide radiation leaks at fiber bend radiation leaks at waveguide bend c axis calcite polarizer waveguide integrated optic normal reflector horn channel waveguide y junction waveguide optical phase modulator cut off modulator electro optic mach zehnder interferometer waveguide parallel coupling waveguide electro optic directional coupler single polished fiber directional coupler double polished fiber directional coupler tunable coupling strength of polished double fiber coupler cross sectional coaxial fiber coupler 2d directional coupler with tapered coupling corrugated reflection gratings optical fiber grating on half polished fiber coupler and track changing reflector with grating assisted coupling fiber

## Optical Waveguide Theory by the Finite Element Method

2012-11-07

recent advances in the field of guided wave optics such as fiber optics and integrated optics have included the introduction of arbitrarily shaped optical waveguides which in many cases also happened to be arbitrarily inhomogeneous dissipative anisotropic and or nonlinear most of such cases of waveguide arbitrariness do not lend themselves to analytical solutions hence

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computational tools for modeling and simulation are essential for successful design optimization and realization of the optical waveguides for this purpose various numerical techniques have been developed in particular the finite element method fem is a powerful and efficient tool for the most general i.e. arbitrarily shaped inhomogeneous dissipative anisotropic and nonlinear optical waveguide problem its use in industry and research is extensive and indeed it could be said that without it many optical waveguide problems would be incapable of solution this book is intended for students engineers designers and technical managers interested in a detailed description of the fem for optical waveguide analysis starting from a brief review of electromagnetic theory the first chapter provides the concepts of the fem and its fundamentals in addition to conventional elements i.e. line elements triangular elements tetrahedral elements ring elements and triangular ring elements which are utilized for one dimensional two dimensional three dimensional axisymmetric two dimensional and axisymmetric three dimensional problems respectively special purpose elements such as isoparametric elements edge elements infinite elements and boundary elements are also introduced

## **Optical Waveguide Theory by the Finite Element Method**

2014-01-14

recent advances in the field of guided wave optics such as fiber optics and integrated optics have included the introduction of arbitrarily shaped optical waveguides which in many cases also happened to be arbitrarily inhomogeneous dissipative anisotropic and or nonlinear most of such cases of waveguide arbitrariness do not lend themselves to analytical solutions hence computational tools for modeling and simulation are essential for successful design optimization and realization of the optical waveguides for this purpose various numerical techniques have been developed in particular the finite element method fem is a powerful and efficient tool for the most general i.e. arbitrarily shaped inhomogeneous dissipative anisotropic and nonlinear optical waveguide problem its use in industry and research is extensive and indeed it could be said that without it many optical waveguide problems would be incapable of solution this book is intended for students engineers designers and technical managers interested in a detailed description of the fem for optical waveguide analysis starting from a brief review of electromagnetic theory the first chapter provides the concepts of the fem and its fundamentals in addition to conventional elements i.e. line elements triangular elements tetrahedral elements ring elements and triangular ring elements which are utilized for one dimensional two dimensional three dimensional axisymmetric two dimensional and axisymmetric three dimensional problems respectively special purpose elements such as isoparametric elements edge elements infinite elements and boundary elements are also introduced

## **Beam Propagation Method for Design of Optical Waveguide Devices**

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the basic of the bpm technique in the frequency domain relies on treating the slowly varying envelope of the monochromatic electromagnetic field under paraxial propagation thus allowing efficient numerical computation in terms of speed and allocated memory in addition the bpm based on finite differences is an easy way to implement robust and efficient computer codes this book presents several approaches for treating the light wide angle scalar approach semivectorial treatment and full vectorial treatment of the electromagnetic fields also special topics in bpm cover the simulation of light propagation in anisotropic media non linear materials electro optic materials and media with gain losses and describe how bpm can deal with strong index discontinuities or waveguide gratings by introducing the bidirectional bpm bpm in the time domain is also described and the book includes the powerful technique of finite difference time domain method which fills the gap when the standard bpm is no longer applicable once the description of these numerical techniques have been detailed the last chapter includes examples of passive active and functional integrated photonic devices such as waveguide reflectors demultiplexers polarization converters electro optic modulators lasers or frequency converters the book will help readers to understand several bpm approaches to build their own codes or to properly use the existing commercial software based on these numerical techniques

## Optical Waveguides and Devices Modeling and Visualization Using COMSOL Multiphysics Volume 1

2018-10-19

this pictorial manuscript is a step by step graphical illustrations for waveguides and devices modeling and computational physics simulation using comsol multiphysics with ray optics wave optics and ac dc electrostatics modules all the example models investigated and visualized with the help of finite element analysis are referenced from the standard usa undergraduate text on optical guided waves and devices by richard syms and john cozens the simulations include the use of geometrical ray tracings for point source and full electromagnetic waves source employing the maxwell s wave equations for plane wave input both 2d and 3d simulation results will help in visualize the electromagnetic field propagating inside the waveguides and devices readers without fundamental handle on optics modeling are suggested to read the optics modeling and visualization with comsol multiphysics a step by step graphical instruction manuscripts for detailed discussion these models may be expanded to post graduate research and industrial photonics waveguides and devices development there are 46 chapters of different 2d and 3d optical waveguides devices structures modeled and simulated in volume 1 and 2 volume 1 models include 3d single mode optical fiber planar waveguide channel waveguide longitudinal and transverse phase modulator surface plasmon optical square waveguide tapered waveguide ftir beamsplitter in ray tracing and electromagnetic wave solvers full prism coupler halved prism coupler plano convex overlay lens overlay luneburg lens geodesic lens with control setup for resulted electric field comparison corrugated gratings transmission and reflection gratings chirped grating lens beam expander grating grating coupler chirped grating coupler buried channel waveguide volume 2 models continue with the ridge channel waveguide strip loaded channel waveguide gaas gaalas planar waveguide gaas gaalas heterostructure

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waveguide radiation leaks at fiber bend radiation leaks at waveguide bend c axis calcite polarizer waveguide integrated optic normal reflector horn channel waveguide y junction waveguide optical phase modulator cut off modulator electro optic mach zehnder interferometer waveguide parallel coupling waveguide electro optic directional coupler single polished fiber directional coupler double polished fiber directional coupler tunable coupling strength of polished double fiber coupler cross sectional coaxial fiber coupler 2d directional coupler with tapered coupling corrugated reflection gratings optical fiber grating on half polished fiber coupler and track changing reflector with grating assisted coupling fiber

## **Optical Waveguide Analysis**

1992

a solutions oriented introduction for electronic engineers and researchers to the computational tools used in the modeling and simulation of optical waveguides a critical technology in fiber optics communication and integrated optical electronics no index first published in japanese in 1990 annotation copyrighted by book news inc portland or

## **Advanced Materials for Integrated Optical Waveguides**

2013-10-17

this book provides a comprehensive introduction to integrated optical waveguides for information technology and data communications integrated coverage ranges from advanced materials fabrication and characterization techniques to guidelines for design and simulation a concluding chapter offers perspectives on likely future trends and challenges the dramatic scaling down of feature sizes has driven exponential improvements in semiconductor productivity and performance in the past several decades however with the potential of gigascale integration size reduction is approaching a physical limitation due to the negative impact on resistance and inductance of metal interconnects with current copper trace based technology integrated optics provides a potentially lower cost higher performance alternative to electronics in optical communication systems optical interconnects in which light can be generated guided modulated amplified and detected can provide greater bandwidth lower power consumption decreased interconnect delays resistance to electromagnetic interference and reduced crosstalk when integrated into standard electronic circuits integrated waveguide optics represents a truly multidisciplinary field of science and engineering with continued growth requiring new developments in modeling further advances in materials science and innovations in integration platforms in addition the processing and fabrication of these new devices must be optimized in conjunction with the development of accurate and precise characterization and testing methods students and professionals in materials science and engineering will find advanced materials for integrated optical waveguides to be an invaluable reference for meeting these research and development goals

## **Frontiers in Planar Lightwave Circuit Technology**

2006-01-12

the contributions to this book constitute an excellent record of many key issues and scientific problems in planar lightwave circuit research there are detailed overviews of experimental and theoretical work in high index contrast waveguide systems micro optical resonators nonlinear optics and advanced optical simulation methods as well as articles describing emerging applications of integrated optics for medical and biological applications

## **Electromagnetic Propagation and Waveguides in Photonics and Microwave Engineering**

2020-10-21

optical and microwave waveguides have attracted much research interest in both science and industry the number of potential applications for their use is growing rapidly this book examines recent advances in the broad field of waveguide technology it covers current progress and latest breakthroughs in emergent applications in photonics and microwave engineering the book includes ten contributions on recent developments in waveguide technologies including theory simulation and fabrication of novel waveguide concepts as well as reviews on recent advances

## **Fundamentals of Optical Waveguides**

2006

fundamentals of optical waveguides is an essential resource for any researcher professional or student involved in optics and communications engineering any reader interested in designing or actively working with optical devices must have a firm grasp of the principles of lightwave propagation katsunari okamoto has presented this difficult technology clearly and concisely with several illustrations and equations optical theory encompassed in this reference includes coupled mode theory nonlinear optical effects finite element method beam propagation method staircase concatenation method along with several central theorems and formulas since the publication of the well received first edition of this book planar lightwave circuits and photonic crystal fibers have fully matured with this second edition the advances of these fibers along with other improvements on existing optical technologies are completely detailed this comprehensive volume enables readers to fully analyze design and simulate optical atmospheres features exceptional new chapter on arrayed waveguide grating awg in depth discussion of photonic crystal fibers pcfs thorough explanation of multimode interference devices mmi full coverage of polarization mode dispersion pmd about the author katsunari okamoto was born in hiroshima japan on october 19 1949 he received the b s m s and ph d in electronic engineering from tokyo university japan in 1972 1974 and 1977 respectively he has engaged in research on the transmission characteristics of various fibers including panda fibers as well as fiber optic

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components and proposed the idea of dispersion flattened fibers dff on which he has also experimented dr okamoto has worked for the optical fiber group in southampton england and the ntt photonics laboratories at the ibaraki r d center where he developed various awgs and integrated optic add drop multiplexers he is a fellow of ieee and a research fellow of ntt science and core technology laboratory group in 2003 he started okamoto laboratory ltd okamoto laboratory is an r d consulting company that deals with the custom design of optical fibers and functional planar lightwave circuits

## **Introduction to Optical Waveguide Analysis**

2004-04-05

a complete survey of modern design and analysis techniques for optical waveguides this volume thoroughly details modern and widely accepted methods for designing the optical waveguides used in telecommunications systems it offers a straightforward presentation of the sophisticated techniques used in waveguide analysis and enables a quick grasp of modern numerical methods with easy mathematics the book is intended to guide the reader to a comprehensive understanding of optical waveguide analysis through self study this comprehensive presentation includes an extensive and exhaustive list of mathematical manipulations detailed explanations of common design methods finite element method fem finite difference method fdm beam propagation method bpm and finite difference time domain method fd tdm explanations for numerical solutions of optical waveguide problems with sophisticated techniques used in modern computer aided design cad software solutions to maxwell s equations and the schrodinger equation the authors provide excellent self study material for practitioners researchers and students while also presenting detailed mathematical manipulations that can be easily understood by readers who are unfamiliar with them introduction to optical waveguide analysis presents modern design methods in a comprehensive and easy to understand format

## **Guided Wave Photonics**

2016-04-19

a comprehensive presentation of the theory and simulation of optical waveguides and wave propagations in a guided environment guided wave photonics fundamentals and applications with matlab supplies fundamental and advanced understanding of integrated optical devices that are currently employed in modern optical fiber communications systems and p

## **Optical Waveguide Theory**

2012-12-06

this text is intended to provide an in depth self contained treatment of optical waveguide theory we have attempted to emphasize the underlying physical processes stressing conceptual

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aspects and have developed the mathematical analysis to parallel the physical intuition we also provide comprehensive supplementary sections both to augment any deficiencies in mathematical background and to provide a self consistent and rigorous mathematical approach to assist in understanding each chapter concentrates principally on a single idea and is therefore comparatively short furthermore over 150 problems with complete solutions are given to demonstrate applications of the theory accordingly through simplicity of approach and numerous examples this book is accessible to undergraduates many fundamental topics are presented here for the first time but more importantly the material is brought together to give a unified treatment of basic ideas using the simplest approach possible to achieve such a goal required a maturation of the subject and thus the text was intentionally developed over a protracted period of the last 10 years

## **Optical Waveguide Modes: Polarization, Coupling and Symmetry**

2010-03-10

publisher's note products purchased from third party sellers are not guaranteed by the publisher for quality authenticity or access to any online entitlements included with the product a complete guide to optical waveguide modes this in depth work explains how transverse optical waveguide geometry influences field distribution and polarization properties you will gain a thorough understanding of the fundamental physics of mode structure optical waveguide modes covers single and few mode optical waveguides with an emphasis on single core and multicore optical fibers and couplers including a large range of geometries and anisotropies analysis is performed using extensions of the weak guidance perturbation formalism together with elementary group representation theory this definitive volume offers a detailed introduction to and classification of diverse forms of fundamental and higher order modes and various polarization manifestations coverage includes electromagnetic theory for anisotropic media weak guidance for longitudinally invariant fibers circular isotropic longitudinally invariant fibers azimuthal symmetry breaking birefringence linear radial and circular multicore and multifiber couplers

## ***An Introduction to Optical Waveguides***

1981

recently the rapid development of radiofrequency rf microwave and photonic optical waveguide technologies has had a significant impact on the current electronic industrial medical and information and communication technology ict fields this book is a self contained collection of valuable scholarly papers related to waveguide design modeling and applications this book contains 20 chapters that cover three main subtopics of waveguide technologies namely rf and microwave waveguide photonic and optical waveguide and waveguide analytical solutions hence this book is particularly useful to the academics scientists practicing researchers and

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postgraduate students whose work relates to the latest waveguide technologies

## Emerging Waveguide Technology

2018-08-01

light signals in optical waveguides can be used to transmit very large amounts of data quickly and largely without interference in the industrial and infrastructural sectors e.g. in the automotive and aerospace industries the demand to further exploit this potential is therefore increasing which technologies can be used to effectively integrate systems that transmit data by means of light into existing components this is a central question for current research so far there have been some technical limitations in this regard for example it is difficult to couple the signal of an optical waveguide to other optical waveguides without interruption there is also a lack of suitable fabrication technologies for three dimensional waveguides as well as design and simulation environments for 3d opto mid this book addresses these and other challenges

## Optical Polymer Waveguides

2022-12-06

this book provides researchers at the forefront of nonlinear optical technologies with robust procedures and software for the systematic investigation of the fundamental phenomena in nonlinear optical waveguide structures a full vectorial electromagnetic formulation is adopted and the conditions under which simplification to a scalar formulation is possible are clearly indicated the need to model the dielectric saturation properly is identified and improved algorithms are presented for obtaining the complete power dispersion curve of structures exhibiting bistability as the stability analysis of nonlinear modes is crucial to the development of nonlinear model methods an effective procedure to investigate the propagation of the scalar nonlinear waves in 3d is another important feature of the book all of the procedures described as well as an automatic mesh generator for the finite element method are incorporated into a software package which is included with this book

## Finite Element Methods for Nonlinear Optical Waveguides

2019-06-14

although the theory and principles of optical waveguides have been established for more than a century the technologies have only been realized in recent decades optical waveguides from theory to applied technologies combines the most relevant aspects of waveguide theory with the study of current detailed waveguiding technologies in particular photonic devices telecommunication applications and biomedical optics with self contained chapters written by well known specialists the book features both fundamentals and applications the first three

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chapters examine the theoretical foundations and bases of planar optical waveguides as well as critical optical properties such as birefringence and nonlinear optical phenomena the next several chapters focus on contemporary waveguiding technologies that include photonic devices and telecommunications the book concludes with discussions on additional technological applications including biomedical optical waveguides and the potential of neutron waveguides as optical waveguides play an increasing part in modern technology photonics will become to the 21st century what electronics were to the 20th century offering both novel insights for experienced professionals and introductory material for novices this book facilitates a better understanding of the new information era the photonics century

## **Optical Waveguides**

2018-10-03

papers on novel nanostructures and optoelectronic devices physics of quantum dot lasers simulation of fiber devices and optical waveguides optical communications diode laser simulation vcsels and resonant cavity photodiodes physics of low dimensional structures and devices chaos synchronization in diode lasers diode lasers with optical feedback and wide bandgap visible materials and devices

## **Physics and Simulation of Optoelectronic Devices XII.**

2004

an essential up to date textbook in understanding the propagation of light in guided optical structures the author is the founding member of one of today s leading labs in fiber optic communications science and he bases the contents on first hand teaching and lab experience providing a solid and rigorous scientific foundation while also considering the applied view point required for an engineering curriculum he omits fundamental equations of electromagnetism to establish rigorous guided mode solutions concentrating rather on covering all fiber device modeling used in communication ranging from basic concepts of linear guided optics equations and solutions of wave applied guiding structures to optical fiber communication devices includes solutions to maxwell s equations and a wealth of graphs calculation methods and numerical problems to illustrate the theory supplementary material available free to lecturers

## **Guided Optics**

2009-01-07

this book teaches the finite difference frequency domain fdtd method from the simplest concepts to advanced three dimensional simulations it uses plain language and high quality graphics to help the complete beginner grasp all the concepts quickly and visually this single resource includes everything needed to simulate a wide variety of different electromagnetic and

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photonic devices the book is filled with helpful guidance and computational wisdom that will help the reader easily simulate their own devices and more easily learn and implement other methods in computational electromagnetics special techniques in matlab are presented that will allow the reader to write their own fdtd programs key concepts in electromagnetics are reviewed so the reader can fully understand the calculations happening in fdtd a powerful method for implementing the finite difference method is taught that will enable the reader to solve entirely new differential equations and sets of differential equations in mere minutes separate chapters are included that describe how maxwell s equations are approximated using finite differences and how outgoing waves can be absorbed using a perfectly matched layer absorbing boundary with this background a chapter describes how to calculate guided modes in waveguides and transmission lines the effective index method is taught as way to model many three dimensional devices in just two dimensions another chapter describes how to calculate photonic band diagrams and isofrequency contours to quickly estimate the properties of periodic structures like photonic crystals next a chapter presents how to analyze diffraction gratings and calculate the power coupled into each diffraction order this book shows that many devices can be simulated in the context of a diffraction grating including guided mode resonance filters photonic crystals polarizers metamaterials frequency selective surfaces and metasurfaces plane wave sources gaussian beam sources and guided mode sources are all described in detail allowing devices to be simulated in multiple ways an optical integrated circuit is simulated using the effective index method to build a two dimensional model of the 3d device and then launch a guided mode source into the circuit a chapter is included to describe how the code can be modified to easily perform parameter sweeps such as plotting reflection and transmission as a function of frequency wavelength angle of incidence or a dimension of the device the last chapter is advanced and teaches fdtd for three dimensional devices composed of anisotropic materials it includes simulations of a crossed grating a doubly periodic guided mode resonance filter a frequency selective surface and an invisibility cloak the chapter also includes a parameter retrieval from a left handed metamaterial the book includes all the matlab codes and detailed explanations of all programs this will allow the reader to easily modify the codes to simulate their own ideas and devices the author has created a website where the matlab codes can be downloaded errata can be seen and other learning resources can be accessed this is an ideal book for both an undergraduate elective course as well as a graduate course in computational electromagnetics because it covers the background material so well and includes examples of many different types of devices that will be of interest to a very wide audience

## **Electromagnetic and Photonic Simulation for the Beginner: Finite-Difference Frequency-Domain in MATLAB®**

2022-01-31

this book provides a comprehensive description of various slab waveguide structures ranged from graded index waveguide to symmetrical metal cladding waveguide in this book the transfer matrix method is developed and applied to analyze the simplest case and the complex

generalizations a novel symmetrical metal cladding waveguide structure is proposed and systematically investigated for several issues of interest such as biochemical sensing goos hanchen shift and the slow light effect etc besides this book summarizes the authors research works on waveguides over the last decade the readers who are familiar with basic optics theory may find this book easy to read and rather inspiring

## **Progress in Planar Optical Waveguides**

2015-11-25

presents the theory underlying the technologies of optical fibre communications integrated optics and optical sensors it includes new material on coupled mode theory coupled power theory approximate and numerical methods nonlinear effects and soliton propagation

## ***Theory of Dielectric Optical Waveguides***

1991

optoelectronics technology based on applications light such as micro nano quantum electronics photonic devices laser for measurements and detection has become an important field of research many applications and physical problems concerning optoelectronics are analyzed in optical waveguiding and applied photonics the book is organized in order to explain how to implement innovative sensors starting from basic physical principles applications such as cavity resonance filtering tactile sensors robotic sensor oil spill detection small antennas and experimental setups using lasers are analyzed innovative materials such as nanocomposites are characterized designed and applied in order to provide new ideas about detection principles as with many electric circuitries light applications and architectures suffer from noising due to physical and transmission connections the book illustrates some examples for practical issues the theory and the nanotechnology facilities provide important tools for researchers working with sensing applications

## **Microwave and Optical Waveguide Analysis by the Finite Element Method**

1996

this spotlight provides an overview of the life cycle of arrayed waveguide gratings awgs from design and simulation to evaluation and technological verification the book describes the awg design procedure by applying a new software tool it discusses the appropriateness of different commercially available photonics tools and their advantages and disadvantages to solve the problems posed by evaluation 19 transmission parameters are defined the book demonstrates that there is very good agreement between designed and simulated measured transmission parameters finally the book describes awg designs with excellent optical demultiplexing

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properties

## **Optical Waveguiding and Applied Photonics**

2014-01-18

this spotlight provides an overview of the life cycle of arrayed waveguide gratings awgs from design and simulation to evaluation and technological verification the book describes the awg design procedure by applying a new software tool it discusses the appropriateness of different commercially available photonics tools and their advantages and disadvantages to solve the problems posed by evaluation 19 transmission parameters are defined the book demonstrates that there is very good agreement between designed and simulated measured transmission parameters finally the book describes awg designs with excellent optical demultiplexing properties

## ***Arrayed Waveguide Gratings***

2016

numerical simulation of optical wave propagation is solely dedicated to wave optics simulations the book discusses digital fourier transforms ft ft based operations multiple methods of wave optics simulations sampling requirements and simulations in atmospheric turbulence

## **Arrayed Waveguide Gratings**

2016

papers on novel nanostructures and optoelectronic devices physics of quantum dot lasers simulation of fiber devices and optical waveguides optical communications diode laser simulation vcsels and resonant cavity photodiodes physics of low dimensional structures and devices chaos synchronization in diode lasers diode lasers with optical feedback and wide bandgap visible materials and devices

## **Design, Manufacturing, and Testing of Planar Optical Waveguide Devices**

2001

modeling simulation design and engineering of wdm systems and networks provides readers with the basic skills concepts and design techniques used to begin design and engineering of optical communication systems and networks at various layers the latest semi analytical system simulation techniques are applied to optical wdm systems and networks and a review of the various current areas of optical communications is presented simulation is mixed with

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experimental verification and engineering to present the industry as well as state of the art research this contributed volume is divided into three parts accommodating different readers interested in various types of networks and applications the first part of the book presents modeling approaches and simulation tools mainly for the physical layer including transmission effects devices subsystems and systems whereas the second part features more engineering design issues for various types of optical systems including ulh access and in building systems the third part of the book covers networking issues related to the design of provisioning and survivability algorithms for impairment aware and multi domain networks intended for professional scientists company engineers and university researchers the text demonstrates the effectiveness of computer aided design when it comes to network engineering and prototyping

## **Optical Fiber and Planar Waveguide Technology**

2001

a comprehensive but practical analysis methodology for treating optical fibre waveguides is presented in this book it is designed for both college students and practicing scientists and engineers the book presents a framework which treats the light waveguide as a continuum of polarizing devices to which a multitude of analysis techniques are applied a more rigorous but easy to grasp mathematical arrangement is developed in parts ii and iii for analyzing an all dielectric or metallic 1d or 2d optical stratum this basic technique is extended in part iv to cover a general 2d or 3d curved optical fibre waveguide for which both the propagative and radiative far field distributions together with a set of characteristic equations and their solutions are established similar to these simplified straight or curvilinear guidance structures an elliptic waveguide or a fibre with the d shaped cladding may be characterized analytically but approximately as demonstrated in part v also included in part v is the so called finite element analysis as a distinctive alternative numerical computation method for analysing a more arbitrary fibre waveguide exhibiting an obvious irregularity or anisotropy

## **Optical Waveguide Modes**

2010

hardbound this book is the first volume to appear in the new series optical wave sciences and technology it provides a comprehensive review on recent trends in optical waveguide theory the main focus of the work is on single mode optics examining in turn the basic tools the derivation of normal modes the perturbation problems and finally the discontinuity problems this new book series which is open ended is aimed at scientists working in the field of electromagnetic theory and its applications maxwell s equations will form the ultimate basis either explicitly or implicitly of every book in the series

## **Numerical Simulation of Optical Wave Propagation with Examples in MATLAB**

2010

the propagation of electromagnetic waves in square law media i e media characterized by a quadratic spatial variation of the dielectric constant has been a favorite subject of investigation in electromagnetic theory however with the recent fabrication of glass fibers with a quadratic radial variation of the dielectric constant and the application of such fibers to optical imaging and communications this subject has also assumed practical importance comparison of experimental results on propagation resolution and pulse distortion in such inhomogeneous waveguides with theory has put the field on a sound base and spurred further work the present book aims at presenting a unified view of important aspects of our knowledge of inhomogeneous optical waveguides a brief discussion of homogeneous dielectric waveguides is unavoidable since it forms a basis for the appreciation of inhomogeneous waveguides a short course based on some chapters of this book was offered to graduate students at iit delhi and was well received we consider that despite the unavoidable mathematical nature of the present book the comparison of experimental results with theory throughout and the description of fabrication technology appen dixes a and b should make its appeal universal the authors are grateful to dr k thyagarajan for writing most of chapter 9 and to their colleagues dr i c goyal dr b p pal and dr a

## **Physics and Simulation of Optoelectronic Devices XII.**

2004

the contributions to this book constitute an excellent record of many key issues and scientific problems in planar lightwave circuit research there are detailed overviews of experimental and theoretical work in high index contrast waveguide systems micro optical resonators nonlinear optics and advanced optical simulation methods as well as articles describing emerging applications of integrated optics for medical and biological applications

## **WDM Systems and Networks**

2011-12-08

proceedings of spie present the original research papers presented at spie conferences and other high quality conferences in the broad ranging fields of optics and photonics these books provide prompt access to the latest innovations in research and technology in their respective fields proceedings of spie are among the most cited references in patent literature

## **Optical Fibre Waveguide Analysis**

1992

this report is an initial investigation into polymer waveguides the cad program beamprop is utilized for modeling of waveguides passive multi mode and single mode waveguides are considered for modeling nonlinear optical polymers in addition to the beampropagation beamprop method the effective index method and the marcatili model are developed it is shown that a conducting cladding layer for the rectangular waveguides could significantly improve the operation performance of nonlinear optical poled polymer waveguides

## ***Optical Waveguide Concepts***

1991-01-01

## **Inhomogeneous Optical Waveguides**

1977

## **Frontiers in Planar Lightwave Circuit Technology**

2010-11-16

## **Physics and Simulation of Optoelectronic Devices XII**

2004

## ***Investigation of Polymer Optical Waveguide Devices***

1999-11-01



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