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First International Conference on Sustainable Technologies for Computational Intelligence
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Optical Fiber and Wireless Communications
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First International Conference on Sustainable Technologies for Computational Intelligence
The 2nd Edition of Optical Wireless Communications: System and Channel Modelling with MATLAB® with additional new materials, is a self-contained volume that provides a concise and comprehensive coverage of the theory and technology of optical wireless communication systems (OWC). The delivery method makes the book appropriate for students studying at undergraduate and graduate levels as well as researchers and professional engineers working in the field of OWC. The book gives a detailed description of OWC, focusing mainly on the infrared and visible bands, for indoor and outdoor applications. A major attraction of the book is the inclusion of Matlab codes and simulations results as well as experimental test-beds for free space optics and visible light communication systems. This valuable resource will aid the readers in understanding the concept, carrying out extensive analysis, simulations, implementation and evaluation of OWC links. This 2nd edition is structured into nine compact chapters that cover the main aspects of OWC systems: History, current state of the art and challenges
Fundamental principles
Optical source and detector and noise sources
Modulation, equalization, diversity techniques
Channel models and system performance analysis
Visible light communications Terrestrial free space optics communications
Relay-based free space optics communications
Matlab codes. A number of Matlab based simulation codes are included in this 2nd edition to assist the readers in mastering the subject and most importantly to encourage them to write their own simulation codes and enhance their knowledge.

Glassy Materials Based Microdevices
Optoelectronic devices are now ubiquitous in our daily lives, from light emitting diodes (LEDs) in many household appliances to solar cells for energy. This handbook shows how we can probe the underlying and highly complex physical processes using modern mathematical models and numerical simulation for optoelectronic device design, analysis, and performance optimization. It reflects the wide availability of powerful computers and advanced commercial software, which have opened the door for non-specialists to perform sophisticated modeling and simulation tasks. The chapters comprise the know-how of more than a hundred experts from all over the world. The handbook is an ideal starting point for beginners but also gives experienced researchers the opportunity to renew and broaden their knowledge in this expanding field.
Single Frequency Semiconductor Lasers

The mobile market has experienced unprecedented growth over the last few decades. Consumer trends have shifted towards mobile internet services supported by 3G and 4G networks worldwide. Inherent to existing networks are problems such as lack of spectrum, high energy consumption, and inter-cell interference. These limitations have led to the emergence of 5G technology. It is clear that any 5G system will integrate optical communications, which is already a mainstay of wide area networks. Using an optical core to route 5G data raises significant questions of how wireless and optical can coexist in synergy to provide smooth, end-to-end communication pathways. Optical and Wireless Convergence for 5G Networks explores new emerging technologies, concepts, and approaches for seamlessly integrating optical-wireless for 5G and beyond. Considering both fronthaul and backhaul perspectives, this timely book provides insights on managing an ecosystem of mixed and multiple access network communications focused on optical-wireless convergence. Topics include Fiber–Wireless (FiWi), Hybrid Fiber-Wireless (HFW), Visible Light Communication (VLC), 5G optical sensing technologies, approaches to real-time IoT applications, Tactile Internet, Fog Computing (FC), Network Functions Virtualization (NFV), Software-Defined Networking (SDN), and many others. This book aims to provide an inclusive survey of 5G optical-wireless requirements, architecture developments, and technological solutions.

Handbook of Optoelectronic Device Modeling and Simulation

This book is useful for researchers especially engineering researchers, this book presents a full view of next-generation passive optical fiber stage 2 and time wavelength division multiplexing. This book includes all the key technology for NG-PON2. All PON Standards are explained in addition to describing the FTTH Architectures, designing description, and some sample results also presented in this book.

Technology Review

Containing the proceedings of an annual symposium, this collection of research articles explores the role of optics in lasers, communication systems, sensors, and quantum electronics.

Technologies for the Wireless Future

Ultra Wideband Communications Typically, communication technology breakthroughs and developments occur for the purposes of home, work, or cellular and mobile networks. Communications in transportation systems are often overlooked, yet they are equally as important. Communication in Transportation Systems brilliantly bridges theoretical knowledge and practical applications of cutting-edge technologies for communication in automotive applications. This reference source carefully covers innovative technologies which will continue to advance transportation systems. Researchers, developers, scholars, engineers, and graduate students in the transportation and automotive system, communication, electrical, and information technology fields will especially benefit from this advanced publication.

Recent Trends in Communication Networks

"This book presents state-of-the-art research, developments, and integration activities in combined platforms of heterogeneous wireless networks"--Provided by publisher.

Advances in Optics: Reviews, Vol. 2

Over the past decade there have been massive advances in the areas of mobile and optical fiber communications. This unique book shows you how to combine these methods to create new radio over fiber technologies that offer seamless operation and greater multimedia application potential for your current and third generation mobile communication networks.

Advances in Computing, Control and Communication Technology

With the explosion of information traffic, the role of optics becomes very significant to fulfill the demand of super fast computing and data processing and the role of optical amplifier is indispensable in optical communication field. This book covers different advance functionalities of optical amplifiers and their emerging applications such as the role of SOA in the next generation of optical access network, high speed
switches, frequency encoded all-optical logic processors, optical packet switching architectures, microwave photonic system, etc. Technology of improving the gain and noise figure of EDFA and, the study of the variation of material gain of QD structure are also included. All the selected topics are very interesting, well organized and hope it will be of great value to the postgraduate students, academics and anyone seeking to understand the trends of optical amplifiers in present scenario.

Digital and Analog Fiber Optic Communications for CATV and FTTx Applications This book is intended to provide a step-by-step guide to all design aspects and tradeoffs from theory to application for fiber-optics transceiver electronics. Presenting a compendium of information in a structured way, this book enables the engineer to develop a methodical design approach, a deep understanding of specifications parameters and the reasons behind them, as well as their effects and consequences on system performance, which are essential for proper component design. Further, a fundamental understanding of RF, digital circuit design, and linear and nonlinear phenomena is important in order to achieve the desired performance levels. Becoming familiar with solid-state devices and passives used to build optical receivers and transmitters is also important so one can effectively overcome design limitations. The book is organized into six main sections covering the following subjects: a top level overview; optics, semiconductors, and passives; RF concepts; an introduction to CATV modems and transmitters; digital transceivers' performance, evaluation, and concepts; and integration and testing. Copublished with Wiley Interscience.

Proceedings on International Conference on Recent Advances in Applied Sciences The Proceedings of 3rd International Conference on Opto-Electronics and Applied Optics, OPTRONIX 2016 is an effort to promote and present the research works by scientists and researchers including students in India and abroad in the area of Green Photonics and other related areas as well as to raise awareness about the recent trends of research and development in the area of the related fields. The book has been organized in such a way that it will be easier for the readers to go through and find out the topic of their interests. The first part includes the Keynote addresses by Rajesh Gupta, Department of Energy Science and Engineering, Indian Institute of Technology, Bombay; P.T. Ajith Kumar, President and Leading Scientist Light Logics Holography and Optics, Crescent Hill, Trivandrum, Kerala; and K.K. Ghosh, Institute of Engineering & Management, Kolkata, India. The second part focuses on the Plenary and Invited Talks given by eminent scientists namely, Vasudevan Lakshminarayanan, University of Waterloo, Canada; Motoharu Fujigaki, University of Fukui, Japan; Takeo Sasaki, Tokyo University of Science, Japan; Kehar Singh, Former Professor, Indian Institute of Technology, Delhi, India; Rajpal S. Sirohi, Tezpur University, India; Ajoy Kumar Chakraborty, Institute of Engineering & Management, India; Lakshminarayan Hazra, Emeritus Professor, Calcutta University, India; S.K. Bhadra, Emeritus Scientist, Indian Institute of Chemical Biology, India; Partha Roy Chaudhuri, Department of Physics, Indian Institute of Technology, Kharagpur, India; Navin Nishchal, Indian Institute of Technology, Patna, India; Tarun Kumar Gangopadhyay, CSIR-Central Glass and Ceramic Research Institute, India; Samudra Roy, Department of Physics, Indian Institute of Technology, Kharagpur, India; Kamakhya Ghatak, University of Engineering & Management, India. The subsequent parts focus on contributory papers in Green Photonics; Fibre and Integrated Optics; Lasers, Interferometry; Optical Communication and Networks; Optical and Digital Data and Image Processing; Opto-Electronic Devices, Terahertz Technology; Nano-Photonics, Bio-Photonics, Bio-Medical Optics; Lasers, Quantum Optics and Information Technology; E. M. Radiation Theory and Antenna; Cryptography; Quantum and Non-Linear Optics, Opto-Electronic Devices; Non-Linear Waveguides; Micro-Electronics and VLSI; Interdisciplinary.

Optical Wireless Communications Proceedings on International Conference on Recent Advances in Applied Sciences conducted on February 11-13, 2016 by the Science and Humanities Association of St.Peter's University, Avadi, Chennai and Indian Spectrophysics Association, Chennai in corporate association with Scientific Communications Research Academy(SCRA), Chennai, India.

Ultra Wideband 'Advances in Optics: Reviews' Book Series is a comprehensive study of the field of optics, which provides readers with the most up-to-date coverage of optics, photonics and lasers with a good balance of practical and theoretical aspects. Directed towards both physicists and engineers this Book Series is
also suitable for audiences focusing on applications of optics. The Vol.2 is devoted to lasers and photonics, and contains 15 chapters written by 40 authors from 15 countries: Algeria, Australia, Canada, China, Ecuador, Finland, France, Germany, India, Mexico, Poland, Qatar, Spain, Turkey and USA. A clear comprehensive presentation makes these books work well as both a teaching resources and a reference books. The book is intended for researchers and scientists in physics and optics, in academia and industry, as well as postgraduate students.

ICT Systems and Sustainability This innovative resource presents comprehensive and detailed information on wired and wireless seamless access systems consisting of various types of transmission media including microwave, millimeter-wave, THz wave, and lightwave in fibers. This book explains heterogenous networks consisting of various transmission media with many media converters. Applications of seamless access networks for public infrastructure such as airports, railways and information and communications systems are described. The book focuses on two important features of seamless access systems, including high-capacity transmission capacity limitation due to economics as well as physics, and low-latency transmission. Latency has significant impact on applications including financial transactions and online gaming. Low-latency data is very important for self-driving cars as well. This book presents the concept of sensor-over-fiber, where many antenna units are connected through optical fibers to gather sensor responses coherently. This book provides possible scenarios of future mobile networks which have many antenna units and opto-electric device technologies. Readers will learn about basic and state-of-the-art signal estimation techniques and concludes with exploration of social issues on future information and communication (ICT) infrastructure.

Handbook of Research on Heterogeneous Next Generation Networking: Innovations and Platforms Microtechnology has changed our world since the last century, when silicon microelectronics revolutionized sensor, control and communication areas, with applications extending from domotics to automotive, and from security to biomedicine. The present century, however, is also seeing an accelerating pace of innovation in glassy materials; as an example, glass-ceramics, which successfully combine the properties of an amorphous matrix with those of micro- or nano-crystals, offer a very high flexibility of design to chemists, physicists and engineers, who can conceive and implement advanced microdevices. In a very similar way, the synthesis of glassy polymers in a very wide range of chemical structures offers unprecedented potential of applications. The contemporary availability of microfabrication technologies, such as direct laser writing or 3D printing, which add to the most common processes (deposition, lithography and etching), facilitates the development of novel or advanced microdevices based on glassy materials. Biochemical and biomedical sensors, especially with the lab-on-a-chip target, are one of the most evident proofs of the success of this material platform. Other applications have also emerged in environment, food, and chemical industries. The present Special Issue of Micromachines aims at reviewing the current state-of-the-art and presenting perspectives of further development. Contributions related to the technologies, glassy materials, design and fabrication processes, characterization, and, eventually, applications are welcome.

Optical Fiber and Wireless Communications Taking a coherent and logical approach, this book describesthe potential use of co-ordinated multipoint systems supportedby radio over fiber. It covers an impressive breadth of topics, ranging from components, subsystem and system architecture, tonetwork management and business perspectives. The authors showthe importance of radio over fiber in eliminating or mitigatingagainst the current, perceived barriers to the use of co-ordinatedmultipoint, and the drivers for standardisation activities infuture mobile/wireless systems over the next few years. The book brings together the system concept for centralizedprocessing, including what is required for co-existence with legacywireless systems, the algorithms that can be used for improvingwireless bandwidth utilization at physical and MAC layers and theradio over fiber network and link design necessary to support thewireless system. Other important research is also covered as the authors look at compensating for radio over fiberimpairments and providing simple network managementfunctions. A study of service provision and the businesscase for such a future wireless system is also fullyconsidered. This book comes at an important time for future wireless systems with standardization of fourth generation wireless systems stillongoing. The content enables readers to make key decisions about future standardisation and their own research work. The businessanalyis also makes the book useful to those involved in decidingthe future directions of telecoms organisations. This
information will be core to their decision-making as it provides technical knowledge of the state-of-the-art but also system level assessments of what is possible in a business environment.

Data Intelligence and Cognitive Informatics The book “Intelligent System and Computing” reports the theory, mathematical models, algorithms, design methods, and applications of intelligent systems and computing. It covers various disciplines including computer and information science, electrical and computer engineering, natural sciences, economics, and neuroscience. The broad-ranging discussion covers the key disciplines in computational science and artificial intelligence as well as advances in neuromorphic computing, deep learning, the Internet of Things, computer vision, and many others. This volume provides both academics and professionals with a comprehensive overview of the field and presents areas for future research.

Wired and Wireless Seamless Access Systems for Public Infrastructure The book Optical Fiber and Wireless Communications provides a platform for practicing researchers, academics, PhD students, and other scientists to review, plan, design, analyze, evaluate, intend, process, and implement diverse issues of optical fiber and wireless systems and networks, optical technology components, optical signal processing, and security. The 17 chapters of the book demonstrate capabilities and potentialities of optical communication to solve scientific and engineering problems with varied degrees of complexity.

Future Internet Technologies and Trends This book has addressed few challenges to ensure the success of UWB technologies and covers several research areas including UWB low cost transceiver, low noise amplifier (LNA), ADC architectures, UWB filter, and high power UWB amplifiers. It is believed that this book serves as a comprehensive reference for graduate students in UWB technologies.

Novel Applications of the UWB Technologies The need to develop technology and communication necessitates the design of flexible and high-capacity radiating systems in today’s communication infrastructure. In this context, antenna arrays are the ideal solution and have been one of the priority research subjects of the science community dealing with electromagnetics from past to present. Optimization of an array may be performed in various ways such as the optimization of excitation, reflector structure, feed network, etc. depending on the array structure. This book is a collection of seven research studies focused on the optimization of array structures in classical phased array or time modulation, including radiator, reflector, feed network, and radiating element optimizations.

Applications of Modern RF Photonics This unique new resource presents applications of modern RF photonic systems that use RF photonic components for commonly used signal processing systems. This book provides insight into how a variety of systems work together, including RF down conversion, analog to digital conversion, RF oscillators, and frequency identification. A comparison of analog versus digital systems is presented. Readers find in-depth coverage of analog delay lines using RF photonics, various system architectures, and details about RF photonic component performance. Signal processing utilizing RF photonics and the need for down conversion is discussed. The many advancements in analog delay line performance are explained, including those in photodetector, optical fibers, and optical and amplifier modulators. The book highlights the advantages of using oscillators utilizing RF photonics and explores the elements of phase noise, timing jitter, and optoelectronic oscillators. The benefits of signal identification, isolation, and separation of RF photonics are identified. Professionals are brought up to speed on RF frequency identification using optical injection locking. The book provides discussions on the fundamentals and advancements in integrated RF photonics and explains how to design an RF photonic downconverter. It covers additional applications of integrated photonic circuits and gives an explanation of why to use different modulation formats for different applications.

Proceedings of the 2009 Annual Symposium of the IEEE Photonics Benelux Chapter
Intelligent System and Computing The third volume of the influential WWRF Book of Visions of research and trends in mobile communications has been fully updated. It includes three new chapters on flexible spectrum use, ultra-broadband convergent home-area networks, and the system concept. Visions from manufacturers, network operators, research institutes and academia from all over world are captured by the WWRF in one comprehensive single point of reference. Technologies for the Wireless Future, Volume 3 describes the expectations and requirements of a user in the ‘future wireless world’ between 2010 and 2017. This will enable readers to prioritise research topics based on the provision of cost-effective solutions. This book is ideal for researchers from both academia and industry, as well as engineers, managers, strategists, and regulators. WWRF has become highly influential on the future of wireless communication. You can see the evidence already, as many of the concepts described in the very first Book of Vision have been adopted in today’s wireless implementations. The organization brings together the long-range views of academia with the practical constraints and requirements of industry. This is a powerful combination. Mark Pecen, Vice President, Research In Motion Limited The WWRF Book of Vision series of books are an invaluable source of information for key thoughts and technology developments in wireless and mobile communication. The comprehensiveness and diversified nature of its research reports and results can prove to be a very useful tool in planning and developing the next generation network and services. Bill Huang, General Manager, China Mobile Research As mobile broadband becomes part of our daily lives, in the same way that mobile telephony has done, and helps us to support important issues such as health care, education and many other priorities, WWRF is again exploring the options for mobile and wireless systems in its’ third edition of the Book of Visions. Earlier versions have helped to reach global consensus on research objectives, reduce investment risk and generate critical mass in research efforts. The third book of visions provides key insights into the international academic and commercial discussion on tomorrows' hot topics in mobile research! Håkan Eriksson, Senior Vice President, CTO, Ericsson

Optical and Microwave Technologies for Telecommunication Networks Ultra wideband (UWB) communication systems are characterized by high data rates, low cost, multipath immunity, and low power transmission. In 2002, the Federal Communication Commission (FCC) legalized low power UWB emission between 3.1 GHz and 10.6 GHz for indoor communication devices stimulating rapid development of UWB technologies and applications. The proposed book Novel Applications of the UWB Technologies consists of 5 parts and 20 chapters concerning the general problems of UWB communication systems, and novel UWB applications in personal area networks (PANs), medicine, radars and localization systems. The book will be interesting for engineers and researchers occupied in the field of UWB technology.

Optical Fiber Communications Ultra wideband technology is one of the most promising directions in the rapidly developing modern communications. Ultra wideband communication system applications include radars, wireless personal area networks, sensor networks, imaging systems and high precision positioning systems. Ultra wideband transmission is characterized by high data rate, availability of low-cost transceivers, low transmit power and low interference. The proposed book consisting of 19 chapters presents both the state-of-the-art and the latest achievements in ultra wideband communication system performance, design and components. The book is addressed to engineers and researchers who are interested in the wide range of topics related to ultra wideband communications.

Millimeter-Wave Radio-over-Fiber Links based on Mode-Locked Laser Diodes This is a self-contained book on the foundations and applications of optical and microwave technologies to telecommunication networks application, with an emphasis on access, local, road, cars, trains, vessels and airplanes, indoor and in-car data transmission as well as for long-distance fiber-systems and application in outer space and automation technology. The book provides a systematic discussion of physics/optics, electromagnetic wave theory, optical fibre technology, and the potential and limitations of optical and microwave transmission.

Green, Energy-Efficient and Sustainable Networks This book contains proceedings of the International Conference on Advances in Computing, Control and Communication Technology (IAC3T) organized by Centre for Computer Education, Institute of Professional Studies, University of Allahabad during March 25-27,
2016 at Allahabad. A total of 138 full papers were submitted to the conference, out of which about 40 papers were accepted and finally 35 papers were presented during the conference. This book contains these papers. The conference was a major multidisciplinary conference organized with the objective to expose the participants to the emerging trends in the area of computing, control and communication technology. The conference intended to serve as a major international forum for the exchange of ideas and to provide an interactive platform to the students (budding engineers), engineers, researchers and academicians to exchange their innovative ideas and experiences in the area of advancements in computing, control and communication technology.

Optical and Wireless Convergence for 5G Networks This book systematically introduces the single frequency semiconductor laser, which is widely used in many vital advanced technologies, such as the laser cooling of atoms and atomic clock, high-precision measurements and spectroscopy, coherent optical communications, and advanced optical sensors. It presents both the fundamentals and characteristics of semiconductor lasers, including basic F-P structure and monolithic integrated structures; interprets laser noises and their measurements; and explains mechanisms and technologies relating to the main aspects of single frequency lasers, including external cavity lasers, frequency stabilization technologies, frequency sweeping, optical phase locked loops, and so on. It paints a clear, physical picture of related technologies and reviews new developments in the field as well. It will be a useful reference to graduate students, researchers, and engineers in the field.

Communication in Transportation Systems The book Green, Energy-Efficient and Sustainable Networks provides insights and solutions for a range of problems in the field of obtaining greener, energy-efficient, and sustainable networks. The book contains the outcomes of the Special Issue on “Green, Energy-Efficient and Sustainable Networks” of the Sensors journal. Seventeen high-quality papers published in the Special Issue have been collected and reproduced in this book, demonstrating significant achievements in the field. Among the published papers, one paper is an editorial and one is a review, while the remaining 15 works are research articles. The published papers are self-contained peer-reviewed scientific works that are authored by more than 75 different contributors with both academic and industry backgrounds. The editorial paper gives an introduction to the problem of information and communication technology (ICT) energy consumption and greenhouse gas emissions, presenting the state of the art and future trends in terms of improving the energy-efficiency of wireless networks and data centers, as the major energy consumers in the ICT sector. In addition, the published articles aim to improve energy efficiency in the fields of software-defined networking, Internet of things, machine learning, authentication, energy harvesting, wireless relay systems, routing metrics, wireless sensor networks, device-to-device communications, heterogeneous wireless networks, and image sensing. The last paper is a review that gives a detailed overview of energy-efficiency improvements and methods for the implementation of fifth-generation networks and beyond. This book can serve as a source of information in industrial, teaching, and/or research and development activities. The book is a valuable source of information, since it presents recent advances in different fields related to greening and improving the energy-efficiency and sustainability of those ICTs particularly addressed in this book.

Next Generation Wireless Communications Using Radio over Fiber In recent years there has been many developments in communication technology. This has greatly enhanced the computing power of small handheld resource-constrained mobile devices. Different generations of communication technology have evolved. This had led to new research for communication of large volumes of data in different transmission media and the design of different communication protocols. Another direction of research concerns the secure and error-free communication between the sender and receiver despite the risk of the presence of an eavesdropper. For the communication requirement of a huge amount of multimedia streaming data, a lot of research has been carried out in the design of proper overlay networks. The book addresses new research techniques that have evolved to handle these challenges.

Fundamentals of Microwave Photonics
Enabling 6G Mobile Networks This book gathers high-quality papers presented at the First International Conference on Sustainable Technologies for Computational Intelligence (ICTSCI 2019), which was organized by Sri Balaji College of Engineering and Technology, Jaipur, Rajasthan, India, on March 29–30, 2019. It covers emerging topics in computational intelligence and effective strategies for its implementation in engineering applications.

Key technologies for NG-PON2 system

Proceeding of International Conference on Intelligent Communication, Control and Devices

Advances in Recent Trends in Communication and Networks

Advances in Optical Science and Engineering A comprehensive resource to designing and constructing analog photonic links capable of high RF performance. Fundamentals of Microwave Photonics provides a comprehensive description of analog optical links from basic principles to applications. The book is organized into four parts. The first begins with a historical perspective of microwave photonics, listing the advantages of fiber optic links and delineating analog vs. digital links. The second section covers basic principles associated with microwave photonics in both the RF and optical domains. The third focuses on analog modulation formats—starting with a concept, deriving the RF performance metrics from basic physical models, and then analyzing issues specific to each format. The final part examines applications of microwave photonics, including analog receive-mode systems, high-power photodiodes applications, radio astronomy, and arbitrary waveform generation. Covers fundamental concepts including basic treatments of noise, sources of distortion and propagation effects. Provides design equations in easy-to-use forms as quick reference. Examines analog photonic link architectures along with their application to RF systems. A thorough treatment of microwave photonics, Fundamentals of Microwave Photonics will be an essential resource in the laboratory, field, or during design meetings. The authors have more than 55 years of combined professional experience in microwave photonics and have published more than 250 associated works.

Radio Over Fiber Technologies for Mobile Communications Networks The book presents high-quality research papers presented at the first international conference, ICICCD 2016, organised by the Department of Electronics, Instrumentation and Control Engineering of University of Petroleum and Energy Studies, Dehradun on 2nd and 3rd April, 2016. The book is broadly divided into three sections: Intelligent Communication, Intelligent Control and Intelligent Devices. The areas covered under these sections are wireless communication and radio technologies, optical communication, communication hardware evolution, machine-to-machine communication networks, routing techniques, network analytics, network applications and services, satellite and space communications, technologies for e-communication, wireless Ad-Hoc and sensor networks, communications and information security, signal processing for communications, communication software, microwave informatics, robotics and automation, optimization techniques and algorithms, intelligent transport, mechatronics system, guidance and navigation, algorithms, linear/non-linear control, home automation, sensors, smart cities, control systems, high performance computing, cognition control, adaptive control, distributed control, prediction models, hybrid control system, control applications, power system, manufacturing, agriculture cyber physical system, network control system, genetic control based, wearable devices, nano devices, MEMS, bio-inspired computing, embedded and real-time software, VLSI and embedded systems, FPGA, digital systems and logic design, image and video processing, machine vision, medical imaging, and reconfigurable computing systems.

Selected Topics on Optical Amplifiers in Present Scenario This book constitutes the refereed proceedings of the First International Conference on Future Internet Technologies and Trends, ICFITT 2017, held in Surat, India, August 31 – September 2, 2017. The 28 full papers were selected from 66 submissions and present next generation requirements for extremely high speed data communications, IoT, security, broadband technology, cognitive radio, vehicular technology, gigabit wireless networks, data management and big data.
Advances in Array Optimization Beginning with an overview of historical development, the electromagnetic spectrum, and optical power basics, this book offers an in-depth discussion of optic receivers, optical transmitters and amplifiers. The text discusses attenuation, transmission losses, optical sources such as semiconductor light emitting diodes, and lasers, providing several dispersion-management schemes that restore the amplified signal to its original state. Topics are discussed in a structured manner, with definitions, explanations, examples, illustrations, and informative facts. Extensive pedagogical features, such as numerical problems, review questions, multiple choice questions, and student-focussed learning objectives, are also provided. Mathematical derivations and geometrical representations are included where necessary. This text will be useful for undergraduate and graduate students of electronics, communication engineering, and optical fiber communications.