

A Third of a Century of Lightwave Technology

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(Editorial)

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FOR A THIRD of a century, the IEEE/OSA JOURNAL OF LIGHTWAVE TECHNOLOGY (JLT) has been publishing breakthrough research across all aspects of guided-wave optical science, technology, engineering, and applications, including theoretical, numerical, and experimental results from laboratory setups to field trials. Considered by many as the premier journal in this field, and consistently ranking near the top by various comparative journal metrics, JLT has covered optical fiber and cable technologies, active and passive guided-wave components (sources, detectors, repeaters, switches, sensors, etc.), integrated optics and optoelectronics, subsystems, systems and networks, as well as new applications related to guided-wave technologies. There can be no doubt that the global scientific community has made enormous progress in the above topic areas over the past $33\frac{1}{3}$ years, developing companies and industries out of the research reported in JLT. This special collection of papers published over the course of JLT's history is intended to reflect on the progress and impact that lightwave technologies have had on society.

The selection of papers making up this issue has first and foremost been made directly by you, JLT's valued readership, through various citation metrics (such as total and average numbers of citations), obtained from several journal citation databases. Fig. 1 shows the citation distribution of JLT papers obtained from Google Scholar. The highest-cited papers have accumulated over 3,000 citations in total, and over 150 citations on average per year. In order to build this collection, each Editor-in-Chief¹ further augmented a purely citation metrics based first-cut selection by adding some further papers that were also very well cited or otherwise of exceeding importance to the field. Bound by an overall page budget of 1000 pages for this collection, which represents about 1% of the pages published in JLT's history, there is naturally a vast number of excellent papers that could not be included. Yet, we hope that this selection gives a representative view of what JLT was able to offer our community in the third of a century of its existence.

Before diving into the technical papers, we invite the interested reader to skim through this editorial recollection of JLT's history and its evolution into the journal it is today. We hope that you will enjoy browsing through this issue as much as we enjoyed preparing it for you!

¹The paper selections from 1989 to 1994 were made by R. W. Tkach, who served as an Associate Editor with Donald B. Keck as the Editor-in-Chief.

I. THE BEGINNINGS OF THE JOURNAL

The JOURNAL OF LIGHTWAVE TECHNOLOGY was established in 1983 by nine² technical societies of the Institute of Electrical and Electronics Engineers (IEEE) and the Optical Society of America (OSA) "to serve the lightwave community by being a strong, definitive journal for lightwave publications" [1], in recognition of the maturing nature of optical fiber and integrated optical technologies and its growing importance.

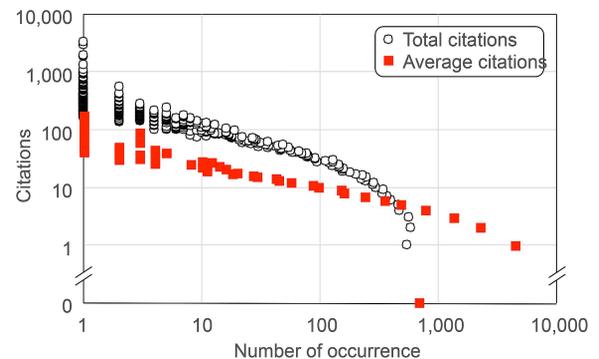


Fig. 1. Statistics of total citations (open circles) and average citations per year (filled squares) of papers published in JLT over its $33\frac{1}{3}$ -year history. Data based on Google Scholar.

Several individuals played key roles in the establishment of JLT, foremost among these individuals was Henry Kressel. He was involved in many of the difficult negotiations between the various societies which took place when the journal was founded and brought them to a successful conclusion. Surveys by the OSA and the IEEE had indicated that the majority of guided-wave technologists desired a single journal dedicated to their technological area. But before launching a new journal in 1983, the Societies wanted to experimentally determine the real need and uptake, so in April and October of 1982, two special issues on guided-wave technologies were simultaneously published in the IEEE JOURNAL OF QUANTUM ELECTRONICS [2] and

²The nine IEEE Societies that together with the OSA started JLT were the Aerospace and Electronic Systems Society (AESS), the Communications Society (ComSoc), the Computer Society (CS), the Circuits and Systems Society (CAS), the Electron Devices Society (EDS), the Instrumentation & Measurement Society (I&M), the Lasers and Electro-Optics Society (LEOS, now Photonics Society), the Microwave Theory and Techniques Society (MTTS), and the Ultrasonics, Ferroelectrics, and Frequency Control Society (UFFC).

the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES [3]. These two issues clearly demonstrated the growth and importance of guided-wave technologies, and the strong author and readership interest in having a dedicated guided-wave journal. It was decided that because of the interdisciplinary interest in fiber and integrated optics, it was in the interest of the community to not limit control of the journal to only one Society, but to have representation by all the technology stake holders which led to the multi-Society structure that has so successfully guided the journal. In 1983, the journal was published only quarterly, in 1984 and 1985 bimonthly, then monthly until 2007, and semi-monthly from 2008 onwards.

Recently, Dr. John Lee, who has been involved with JLT since its inception and served many years as its treasurer, commented that governance by committee was always a challenge. He mentioned that at a recent IEEE-wide periodicals review, one reviewer remarked on how it is a miracle that JLT has managed to survive with its multi-Society sponsorship and governance. Normally, a journal is governed and nourished by the Society that publishes that journal. However as mentioned above, the rationale for JLT was to provide a *single* home for reporting developments in a rapidly-developing, multi-disciplinary field, across artificial societal borders. Hence, JLT was sponsored by the OSA and 9 IEEE Societies (now 7, since the IEEE Computer and IEEE Circuits and Systems Societies dropped out in 1988 and 1989). The operations (production, financing and administration) resided strictly with the IEEE. Almost everything relied on volunteers to make major decisions, such as on page budgets and finances. Following heroic efforts to get the journal up and running, a big shock in the early days was the appearance of huge operational deficits. Numbers of papers and subscriptions were increasing greatly year-over-year, often doubling. But page-charge and subscription income was reflective of the previous year's numbers and projections did not anticipate such growth. The sponsoring Societies were obviously not very excited about incurring an additional deficit item in an already challenging economic environment at the time. Complaints aside, things were worked out and this financial tale does have a happy ending. The volunteer committee undertook a fine-tooth-comb examination of JLT production costs, and was soon able to balance the budget, even with continued growth of JLT, albeit in the low double digits. Surpluses appeared when page budgets leveled off. Surpluses were allowed to accumulate in a reserve fund for use in emergencies (e.g., to buffer economic downturns or unexpected increases in production costs) and for initiatives such as Special Issues on hot topics at conferences. However, once the reserve exceeded \$1M, it had clearly outgrown its purpose, and the reserve and subsequent surpluses were returned to the 7 Societies, with thanks for their sponsorship and loyalty.

During the early years, special issues were periodically used to highlight important areas of growth in lightwave technologies, to illustrate trends and progress, and equally importantly to help spur journal growth. Several of the JLT special issues were also distributed free of charge to subscribers of selected Societies, which teamed in generating the special issue. Representative special issues of the many published from this period include one on Coherent Communications, one on Terrestrial Lightwave Systems, one on Undersea Lightwave Communica-

tions, and one on Fiber Optical Local Area Networks. These helped establish the benchmarks of progress in the early period and became primary references in the respective communities.

II. THE EVOLUTION TO TODAY'S JOURNAL

From its very beginning, JLT has always enjoyed close natural ties to the annual Optical Fiber Communications Conference (OFC), which itself is a joint operation between the OSA, the IEEE Communications Society, and the IEEE Photonics Society. As OFC's attendee base overlaps to a very large extent with JLT's core readership, authorship, and volunteer leadership, it comes as no surprise that the conference and the journal have evolved together ever since JLT's inception. In fact, from the mid-1980s until the early 1990s, JLT published several Special Issues on OFC, until the conference grew too large for an open Call for Papers. Based on the insight and support from Drs. Karen Liu and Paul Shumate, as well as the enthusiastic support from the OFC Steering Committee and the JLT Steering and Coordinating Committees, the OFC Special Issue in JLT was rekindled for OFC 2003, reflecting the symbiotic relationship between OFC and JLT that our community has been enjoying for decades. The journal has published an OFC Special Issue ever since, soliciting follow-up work on post-deadline papers and tutorial reviews from the conference. The Guest Editors for these Special Issues have been the OFC General and Program Co-Chairs. Drawing on the huge readership and authorship interest in special issues that present full-length follow-up conference papers in a single journal volume, JLT is now routinely publishing conference special issues, such as for the Optical Fiber Sensors Conference, the Optical Interconnects Conference, and recently also the European Conference on Optical Communication. In addition, and in close collaboration with OFC and with the OSA/IEEE JOURNAL OF OPTICAL COMMUNICATIONS AND NETWORKING (JOCN), JLT has started to publish a collection of invited and top-scored contributed OFC follow-up papers.

Since 2012, JLT has been publishing in what has become known as the Hybrid Open Access model. It is the authors' choice whether they prefer publishing their work using traditional subscriber-based publishing (where authors do not have to pay mandatory page charges for regular-length articles, and publication costs are recovered from individual or library-based subscriptions through IEEEExplore and OSAPublishing), or using open-access publishing (where authors pay a one-time publication fee, which makes their paper accessible free-of-charge to anybody with an internet connection). An interesting detail in this context is that due to its denser typesetting, one JLT page is equivalent, on average, to about 1.6 pages in other open-access journals, which makes the open-access option in JLT particularly cost-attractive to JLT authors. Having this freedom in publication expense budgeting is highly appreciated by JLT's authorship.

In 2014, JLT established an Award for the 'best' original paper(s) published by the journal in the calendar years preceding the Award by 3 years, i.e., the Award given in 2014 considers papers published during the course of 2011. It again should come as no surprise that the JLT Award is given as part of the Awards Ceremonies at OFC. During the first year of the Award, two important facts revealed themselves: First, while the criterion to

determine the ‘best’ original paper was intentionally left completely undefined and the JLT Editorial Board was encouraged to browse through all 2011 JLT papers, shortlist, and vote on the ‘best’ papers, it turned out that the winning two papers were the ones with the highest numbers of citations, which for the two winners were consistently high across multiple databases, with an unambiguous gap to the next highly-cited ones. This instilled some level of confidence in taking citation metrics as a basis for the Award, especially since the Award only looks 2–3 years into the past. Second, it turned out that both winning papers were co-authored by members of JLT’s Editorial Board, which in retrospect is nothing but a compliment to the ability of JLT to recruit its top authors to become active volunteers for the benefit of the journal. Still, to avoid any perception of conflicts of interest, starting with the 2015 Award, the Editorial board was completely taken out of the picture in the award selection, and it was decided that the winners be determined exclusively by JLT’s Steering and Coordinating Committees, based on citation metrics of eligible (original) JLT papers. The JLT Award winning papers are summarized in Table I, together with the page numbers at which they can be found within this special collection.

TABLE I
WINNERS OF THE JLT AWARD

Award Year	Publication Year	First Author	Page in This Collection
2014	2011	G. Bosco <i>et al.</i>	Page 899
		K. Christodouloupoulos <i>et al.</i>	Page 886
2015	2012	R. Ryf <i>et al.</i>	Page 908
		A. Carena <i>et al.</i>	Page 945
2016	2013	Y. Luo <i>et al.</i>	Page 961

Another important recent development is JLT’s on-line presence, which started in 2015, after a year of website planning and design. The website not only contains answers to almost all questions an author might have when submitting a paper, but also features dedicated search options to easily locate JLT Special Issues. Instead of writing much more about JLT’s new website, we encourage you to simply visit <http://www.ieee-jlt.org>. Happy browsing!

III. THE JOURNAL IN NUMBERS

Twice a year, a JLT Editor-in-Chief has to report on the status and strategic development of the Journal to JLT’s Steering and Coordinating Committees. At these meetings, JLT’s financials are also reviewed by JLT’s Treasurer and page budgets for the next year are set. As some of these statistics and numbers might be interesting to our readership, we are summarizing them in what follows.

A. Paper Statistics and Demographics

Over the past 2 years, JLT received around 1400 submissions per year, including both original and special issue papers. This number reflects a doubling in submissions over the past 10 years. Despite the dramatically increasing number of submissions, the accepted papers have only increased by about 40%

over the same time period, reflecting a lower acceptance ratio. While in 2000 JLT’s acceptance ratio was still as high as 70%, today’s acceptance ratio is slightly below 50%. Fig. 2 shows the evolution of pages published per year in JLT (open circles) as well as the cumulative number. As of March 2016, 33 $\frac{1}{3}$ years of JLT have seen 11,527 published papers across 94,350 published journal pages.

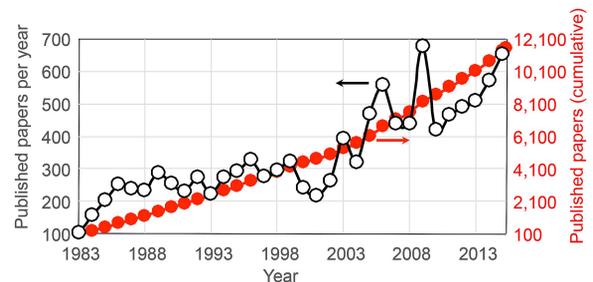


Fig. 2. Papers published in JLT across its history; open circles and left y-axis: papers published per year; solid circles and right y-axis: cumulative number of papers published.

In 2015, 44% of all published papers come from Europe, Middle East and Africa, 38% from the Asia-Pacific region, and 18% from the Americas, reflecting the truly international nature of the journal.

B. Time-to-Publication

Probably the most important metric of a journal as seen by an author is its time-to-publication. However, this metric depends a lot on whether a journal allows for revisions, if these revisions may be major or just minor, how many revisions are allowed, and what time is given to the authors to revise their papers. Since JLT is strictly about the quality of a paper and will not sacrifice quality for speed, the journal is rather generous in terms of revisions and deadline extensions towards authors. In addition, the time-to-publication for print journals is usually taken from submission to print, which can include a significant amount of time after a paper has already been accepted. As such, we view time-to-publication as an ill-defined metric and rather measure the journal’s ‘impulse response’ as the average time from the moment a paper is submitted to the moment an author receives a decision. This time has been brought down to about 40 days over the past years and reflects a very competitive reaction time towards our authors. As JLT is entirely volunteer driven, from the Editor-in-Chief to the Deputy and Associate Editors to the Peer Reviewers, the statistical distribution of the paper processing time exhibits a rather long tail, and it does occasionally happen to find papers in review for periods in excess of 100 days. We are trying everything we can to eliminate these tails within our volunteer framework under the non-negotiable boundary condition of utmost technical rigor and quality.

C. Impact Factor

The impact factor of a journal is determined by Thomson Reuters and is listed in their annual Journal Citation Report (JCR). It is defined as the number of citations from indexed publications to papers published in the journal of interest during

the 2 years preceding the JCR, divided by the total number of “citable items” published by that journal over the same time period; i.e., the 2015 JLT impact factor is the number of citations that JLT papers published in 2013 and 2014 received from indexed publications, divided by the number of JLT citable items published in 2013 and 2014. As will be obvious to the reader, there are numerous skewing effects on journal impact factors, both systematic (e.g., because citations to a journal paper by (non-indexed) conference papers are not accounted for, which is important in fields where conference papers can be as important as journal papers), and deliberate through editorial policies (e.g., by editorial pre-selection of papers from well-known authors or papers that follow current fashions). This makes the impact factor in general a very controversial metric [5]. JLT does not perform any editorial pre-selection; all decisions are strictly made based on peer reviews combined with the handling Associate Editor’s judgment on technical quality and relevance to the field. The current impact factor of JLT is 2.965, and its evolution since 1986 is shown in Fig. 3.

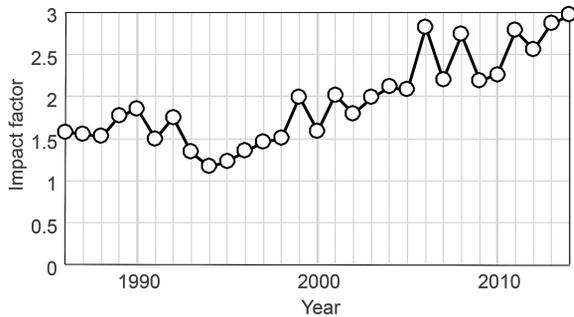


Fig. 3. Impact factor of JLT across its history.

D. Editorial Board

Reflecting the geographic diversity of JLT’s authorship, JLT’s Editorial Board also represents a diverse body of individuals. From 2000 to 2006, the percentage of AEs from outside the U.S. increased from 30% (then typical of many other journals) to roughly 66%. Today, roughly 1/3 of the Editorial Board members are from the Americas, Europe, and the Asia-Pacific region, respectively. Currently, 70% are from academia, 20% from industry, and 10% from government labs.

IV. THANK YOU! AUTHORS, VOLUNTEERS AND STAFF!

As Editors-in-Chief, it has been our privilege and honor to serve JLT, and we are pleased that the journal helped foster the development of a field so critical to our lives today. We want to thank all the pioneers in the field of lightwave technologies who not only contributed to the success of the journal but who also made landmark advances like the ones represented in this collection, leading to today’s vast applications of lightwave technologies.

We thank all JLT authors for publishing their work in this journal. Your excellent contributions make JLT the stellar journal it has been for 33 $\frac{1}{3}$ years and will be in the future!

We thank an army of volunteer reviewers who take time out of their busy schedules to carefully examine JLT submissions within a short period of time and provide their expert opinion. We know that this can be a frustrating experience, especially when authors start to take these reviews personally and respond accordingly. Without your technical rigor and expert guidance, the journal could never be so strong!

We thank the entirely volunteer-based JLT Editorial Board, its Deputy Editors, Associate Editors, and Special Issue Guest Editors for devoting countless hours of volunteer work toward ensuring JLT’s high publication standards. You are doing the heavy lifting without which there would be no review process and no journal of appreciable quality and speed. Our deepest appreciation and thanks to you all!

We thank the IEEE Staff involved in the daily operations of JLT, especially Linda Matarazzo, Doug Hargis, and Lisa Manteria, who have diligently administered the paper handling process from submission to acceptance, including the occasional rejection rebuttal. Enormous extra effort goes into the preparation of Special Issues, which deserves a separate thank-you! Without your tireless effort, JLT would not operate like clockwork! Special thanks also go to AndreAnna McLean and Mona Mitra for seeing papers through from acceptance to on-line posting and print. Without your strict yet always understanding and accommodating hands, the January Issue of JLT would probably be printed in June!

The typically unsung heroes to whom a lot of respect and thanks are due are JLT’s Steering and Coordinating Committee Members, who make sure that the journal operates according to IEEE and OSA guidelines and does not lose money in the jungle of IEEE financial regulations that nobody but this committee truly understands. Thank you for making JLT a sustained and financially viable reality!

Finally, we would like to thank everybody who worked tirelessly behind the scenes to make this special paper collection possible, including Doug Hargis, Lisa Manteria, AndreAnna McLean, Mona Mitra, Louis Vacca, Joe Dockery from the IEEE; Karen Liu, John Lee, Paul Shumate, and Jay Wiesenfeld from JLT’s Steering and Coordinating Committees for active support in all kinds of organizational hurdles during the preparation of this issue; and Dianne Stathum from Nokia Bell Labs, who patiently rescanned in high resolution many of the old papers that were not available in soft form at sufficient quality for reproduction in this issue. A very big thank-you to all of you!

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Peter J. Winzer (S'93–A'98–M'03–SM'05–F'09) received the Ph.D. degree in electrical engineering from Vienna University of Technology, Vienna, Austria, in 1998.

Supported by the European Space Agency (ESA), he investigated photon-starved space-borne Doppler lidar and laser communications using high-sensitivity digital modulation and detection. At Bell Labs since 2000, he has focused on various aspects of high-bandwidth fiber-optic communication systems, including Raman amplification, advanced optical modulation formats, multiplexing schemes, and receiver concepts, digital signal processing and coding, as well as on robust network architectures for dynamic data services. He contributed to several high-speed and high-capacity optical transmission records with interface rates from 10 Gb/s to 1 Tb/s, including the first 100G, 400G, and 1T electronically multiplexed optical transmission systems and the first field trial of live 100G video traffic over an existing carrier network. Since 2008 he has been investigating and internationally promoting spatial multiplexing as a promising option to scale optical transport systems beyond the capacity limits of single-mode fiber. He currently heads the Optical Transmission Subsystems Research at Bell Labs in Holmdel, NJ. He has widely published and patented and is actively involved in technical and organizational tasks with the IEEE Photonics Society and the OSA.

Dr. Winzer currently serves as Editor-in-Chief of the *IEEE/OSA JOURNAL OF LIGHTWAVE TECHNOLOGY*. He was a Program Chair of the 2009 European Conference on Optical Communications (ECOC) and a Program and General Chair of the 2015 and 2017 Optical Fiber Communication Conference (OFC). He is a Bell Labs Fellow, a Fellow of OSA and IEEE, and a 2015 Thomson Reuters Highly Cited Researcher.



Connie J. Chang-Hasnain (M'88–SM'92–F'98) received the Ph.D. degree from the University of California, Berkeley, CA, USA, in 1987.

She is Associate Dean for Strategic Alliances, College of Engineering, and John R. Whinnery Distinguished Chair Professor of Electrical Engineering and Computer Sciences. She is also Chair of Nanoscale Science and Engineering Graduate Group, University of California, Berkeley. Prior to joining the Berkeley faculty, she was a member of the technical staff at Bellcore (1987–1992), and Assistant and Associate Professor of Electrical Engineering at Stanford University (1992–1996). She is an Honorary Member of A.F. Ioffe Institute, Chang Jiang Scholar Endowed Chair Professor at Tsinghua University, Visiting Professor of Peking University and National Chiao Tung University. Her research interests range from semiconductor optoelectronic devices to materials and physics, with current foci on nano-photonics materials and devices for chip-scale integrated optics.

Dr. Chang-Hasnain has been honored with the Quantum Device Award (2014), IEEE David Sarnoff Award (2011), the OSA Nick Holonyak Jr. Award (2007), the IEEE LEOS William Streifer Award for Scientific Achievement (2003), and the Microoptics Award from Japan Society of Applied Physics (2009). Additionally, she has been awarded with a National Security Science and Engineering Faculty Fellowship by the Department of Defense (2008), a Humboldt Research Award (2009), and a Guggenheim Fellowship (2009). She is a member of the U.S. Advisory Committee to the International Commission on Optics, National Academy of Sciences and Skolkovo Foundation Scientific Advisory Council. She served on the National Research Council Committee on "Optics and Photonics: Essential Technologies for Our Nation"; U.S. Air Force Scientific Advisory Board; Board on Assessment of NIST Programs, National Research Council; IEEE LEOS Board of Governors, and OSA Board of Directors. She was Editor-in-Chief of the *IEEE/OSA JOURNAL OF LIGHTWAVE TECHNOLOGY* (2007–2012), and is Associate Editor of the OSA *Optica* since 2013.



Alan E. Willner (S'87–M'88–SM'93–F'04) received the B.A. degree in physics and an Honorary Degree (Honoris Causa) in 1982 and 2012, respectively, from Yeshiva University, and the Ph.D. degree in electrical Engineering from Columbia University, New York, NY, USA, in 1988.

He was a Postdoctoral Member of the Technical Staff at AT&T Bell Labs and a Member of Technical Staff at Bellcore. He is currently the Steven and Kathryn Sample Chaired Professor in Engineering in the Ming Hsieh Department of Electrical Engineering of the Viterbi School of Engineering at the University of Southern California. He has >1000 publications, including 1 book and 30 U.S. patents, primarily in optical communications related technologies.

Prof. Willner received the following honors/awards: Member of the U.S. National Academy of Engineering; International Fellow of the U.K. Royal Academy of Engineering; Presidential Faculty Fellows Award from the White House; IEEE Eric Sumner Award; Guggenheim, Packard, and Fulbright Foundation Fellowships; Fellow of National Academy of Inventors; Optical Society (OSA) Paul Forman Engineering Excellence Award; IEEE Photonics Society Engineering Achievement Award; SPIE President's Award; IEEE Photonics Society Distinguished Lecturer Award; OSA Robert Hopkins Leadership Award; 2001 Eddy Paper Award from Pennwell Publications for the Best Contributed Technical Article; 2014 IEEE Globecom Best Paper Award; and Armstrong Foundation Memorial Award (EE Masters student at Columbia University). He is a Fellow of the AAAS, IEEE, OSA and SPIE. His professional activities have included: Co-Chair of the U.S. National Academies Committee on the Optics and Photonics Study, President of the Optical Society, President of the IEEE Photonics Society, Co-Chair of the Science & Engineering Council of the OSA, Chair of the IEEE TAB Ethics and Member Conduct Committee, General Co-Chair of the Conference on Lasers and Electro-Optics (CLEO), and Chair of the Unclassified Technical Program for IEEE MILCOM. His editorial positions have included: Editor-in-Chief of the *IEEE/OSA JOURNAL OF LIGHTWAVE TECHNOLOGY* (JLT), Editor-in-Chief of OSA *Optics Letters*, and Editor-in-Chief of the *IEEE JOURNAL OF SELECTED TOPICS IN QUANTUM ELECTRONICS*.



Rod C. Alferness (SM'83–F'89–LF'15) received the M.S. and Ph.D. degrees in physics from the University of Michigan, Ann Arbor, MI, USA.

He is the Richard A. Auhll Professor and Dean of the College of Engineering at University of California, Santa Barbara, CA, USA. Prior to joining UCSB, he was the Chief Scientist at Bell Labs, following an accomplished career in optoelectronics and electrical engineering. He is well known for his work on integrated-optic devices and optical switching technology and architecture. His research

has been central to the development of global fiber optic communications networks. As Chief Scientist at Bell Labs, he was responsible for strategic directions, technical excellence, and global partnerships - including universities. In a prior role as Senior Vice President of Research, he had overall responsibility for the company's global research laboratories. In his role as Chief Technical Officer for Bell Labs' parent company, Lucent Technologies, he was responsible for transferring the optical technology he worked on to the business units. He is the author of more than 100 journal articles and holds more than 30 patents for his work in optoelectronics and optical networks.

Dr. Alferness is a member of the National Academy of Engineering and a Fellow of the OSA. In 2001, he was the recipient of the IEEE Millennium Award. Alferness received the 2005 IEEE Photonics Award and the 2010 OSA Leadership Award. He has served as President of the OSA and of the IEEE Photonics Society.



Robert W. Tkach is Director of Advanced Photonics Research, Nokia Bell Labs, Alcatel-Lucent, Crawford Hill Location. His research has involved dispersion management, optical amplification, optical networking, and high-speed DWDM transmission systems. Prior to rejoining Bell Laboratories in 2006, he has been: CTO of Celion Networks, Division Manager at AT&T Labs—Research, and a Distinguished Member of Technical Staff at AT&T Bell Laboratories.

Dr. Tkach was General Co-Chair of OFC, Vice-President of OIF, Associate Editor of the IEEE/OSA JOURNAL OF LIGHTWAVE TECHNOLOGY, a member of the IEEE Photonics Society (formerly LEOS) Board of Governors, and currently serves as Vice-President for Publications of the IEEE Photonics Society. He is a Fellow of the OSA, IEEE, and AT&T. He is a member of the National Academy of Engineering and has received the Thomas Alva Edison Patent Award from the R&D Council of New Jersey, the IEEE/OSA John Tyndall Award, the Marconi Prize and Fellowship, and the IEEE Alexander Graham Bell Medal.



Thomas G. Giallorenzi received the B.S. degree in engineering physics, M.S. and Ph.D. degrees in applied physics from Cornell University, Ithaca, NY, USA.

After graduation, he worked as a member of the Technical Staff, General Telephone & Electronics Laboratory. He joined the U.S. Naval Research Laboratory (NRL) in late 1970s, and served in several positions. In 1978, he was appointed as Superintendent of the Optical Sciences Division, a position he served in for 28 years before retiring in 2006. He served as a Senior Scientist in the Naval Center for Space Technology (2007-2009) and from 2007 until the present, he is the Senior Director for Science at the Optical Society of America and serves as a consultant to NRL and several Corporations. During his long career, he performed much of the pioneering research in optical fiber sensor, fiber communications systems now in use on numerous DOD platforms, and terrestrial and undersea links, in EO/IR focal plane development and implementation in missiles, threat warning, and wide area surveillance systems. At NRL, he also managed the largest R&D Electro-Optical Organization in the Navy, determined new technical areas of endeavor, developed new programs to advance the technology base for the Navy. He was often called upon as an expert consultant to advise various government agencies on Electro-Optical and Space Technology issues. His work has been recognized through being awarded numerous awards.

Dr. Giallorenzi was very active in professional society activities including; Editor-In-Chief, IEEE/OSA JOURNAL OF LIGHTWAVE TECHNOLOGY; Associate Editor, *IEEE Lightwave Communications System Magazine*, the PROCEEDINGS OF THE IEEE, and OSA's *Applied Optics*. He was general, and program chairs for over a dozen technical conferences and a member of the program committees of over 30 other conferences. He served as President, IEEE Laser & Electro-Optics Society, Vice President Publications, and as a member, Board of Governors and on the Technical Council of the Optical Society of America, and numerous other boards. Among his many awards was the IEEE/OSA John Tyndall Award, IEEE Harry Diamond Award, The Department of Defense Distinguished Civilian Service Award, The Navy Distinguished Achievement in Science Award, Michelson Award (U. S. Navy League), Navy Rodger E. Easton Engineering Excellence Award, and two Presidential Distinguished Senior Executive Awards.