Biographical Sketch: Alan E. Willner

Alan Willner received a Ph.D. (1988) in Electrical Engineering from Columbia University and a B.A. (1982) in Physics and an Honorary Doctorate (*Honoris Causa*, 2012) from Yeshiva University. Prof. Willner was a Postdoctoral Member of Technical Staff at AT&T Bell Labs and a Member of Technical Staff at Bellcore. He is currently *Distinguished Professor of Electrical & Computer Engineering* and the *Andrew & Erna Viterbi Professorial Chair* in the Ming Hsieh Dept. of Electrical & Computer Eng. of the Viterbi School of Eng. at the Univ. of Southern California; he also has a joint appointment with Dept. of Physics & Astronomy of the Dornsife College. Prof. Willner has been a Visiting Professor at Columbia Univ., Univ. College London, and Weizmann Institute of Science. He has been a Member of the U.S. Army Science Board, a Member of the Defense Sciences Research Council (16-member body that provided reports to DARPA Director & Office Directors), and a member of many technical advisory boards. He was also Founder & CTO of Phaethon Communications, a company whose technology was acquired by Teraxion, that created the ClearSpectrum® dispersion compensator product line which is presently deployed in many commercial systems worldwide.

Prof. Willner has received the following honors: 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, Ellis Island Medal of Honor, IEEE Eric Sumner Technical Field Award, Packard Foundation Fellowship in Science & Engineering, John Guggenheim Foundation Fellowship, U.S. Dept. of Defense Vannevar Bush Faculty Fellowship, Fellow of National Academy of Inventors, Institution of Eng. & Tech. (IET) J.J. Thomson Medal, Thomas Egleston Medal for Distinguished Engineering Achievement (highest eng. award from Columbia Eng. Alumni Association), Optica (formerly Optical Society, OSA) Paul Forman Engineering Excellence Award, IEEE Photonics Society Engineering Achievement Award, National Science Foundation National Young Investigator Award, Fulbright Foundation Senior Scholar Lecture & Research Fellowship, Honorary Professor of Huazhong Univ. of Science & Technology, Civilian Service Commendation Medal (US Dept. of the Army), IEEE Photonics Society Distinguished Lecturer Award, SPIE President's Award, IEEE Photonics Society Distinguished Service Award, USC Associates Award for University-Wide Creativity in Research (highest USC research award), USC Associates Award for University-Wide Excellence in Teaching (highest USC teaching award), OSA Robert Hopkins Leadership Award, USC Phi Kappa Phi Faculty Recognition Award (for significant scholarly work), Member of European Academy of Sciences and Arts, USC Senior Engineering Research Award, USC Best Engineering Teacher Award, 2001 Eddy Paper Award from Pennwell Publications for Best Contributed Technical Article (across all 30 magazines in Pennwell's Advanced Technology Division), IEEE Globecom Best Paper Award, and Edwin Howard Armstrong Foundation Memorial Award for highest-ranked EE Masters student at Columbia University. He is a Fellow of AAAS, APS, IEEE, IET, OSA, SPIE, and AAIA, and he was a Fellow of the Semiconductor Research Corporation. Prof. Willner was an invited foreign dignitary representing the sciences for the 2009 Nobel Prize Ceremonies in Stockholm.

Prof. Willner's activities include: Co-Chair of U.S. National Academies' Study on Optics & Photonics, President of the OSA, President of the IEEE Photonics Society (formerly LEOS), Co-Chair of OSA Science & Engineering Council, Vice-President for Technical Affairs of IEEE Photonics Society, Editor-in-Chief of OSA Optics Letters, Editor-in-Chief of the IEEE/OSA Journal of Lightwave Technology (JLT), Editor-in-Chief of the IEEE Journal of Selected Topics in Quantum Electronics, Associate Editor of the IEEE Journal of Selected Areas in Communications Series on Optical Networks, Photonics Division Chair of OSA, Chair of IEEE TAB Ethics and Member Conduct Committee, Chair of the National Photonics Initiative, General Co-Chair of the Conference on Lasers and Electro-Optics, Program Co-Chair of OSA Annual Meeting, General Chair of IEEE Photonics Society Annual Meeting, Program Chair of Telecommunications Engineering at SPIE's Photonics West, and Chair of the Unclassified Technical Program for IEEE MILCOM.

Prof. Willner has ≥1750 publications (*h-index ≥94, ≥49,300 citations, Google Scholar*), including 1 book, ~10 edited books, ~48 US patents, ~56 keynotes/plenaries, ~26 book chapters, >470 refereed journal papers, and >380 invited papers/presentations. His 2012 Nature Photonics (impact factor ~32) paper has >5000 citations and is the #2 most cited original paper and #6 most cited paper overall in Nature Photonics' ~18-year history. His research is primarily in optical technologies (e.g., communications, signal processing, networks, and subsystems).

FULL CV: ALAN ELI WILLNER

ADDRESS: EEB 538, Dept. of Electrical Engineering, Viterbi School of Engineering, USC, LA, CA 90089-2565, 213-740-4664, F: 213-740-8729, willner@usc.edu

EDUCATION:

Columbia University - **Ph.D.** - Electrical Engineering - Aug. 1988 (defended). Thesis Advisor - **Prof. Richard Osgood, Jr.,** Thesis Title: Laser-Controlled Photochemical Etching of Semiconductors for Electro-optical Devices

Columbia University - **M.S.** - Electrical Engineering (1984)
Overall Columbia grade index - **4.11** (A = 4.0)

Yeshiva University - **B.A.**- Physics (1982). Grade index - **3.96** (A = 4.0)

WORK EXPERIENCE:

Fall '10 - present **Distinguished Prof. ('21), Ming Hsieh Dept. of Electrical & Computer Eng., Andrew & Erna Viterbi Professorial Chair ('22)**
Steven & Kathryn Sample Chair in Eng. ('10-'22), Viterbi School of Eng., Joint Appointment w/ Dept. of Physics & Astronomy, Dornsife College ('22)
University of Southern California
· Optical Communication Systems and Networks

Mar. '15 - present Visiting Prof ('15), then Adj. Senior Res. Scientist, Elec Eng Dept, Columbia Univ

Sept. '17 - present Visiting Scholar, Yeshiva College and Stern College for Women, Yeshiva Univ.

Fall '98 – Spring '10 Professor, Ming Hsieh Dept. of Electrical Eng., USC

Sept. '09 –June '14 Member**, Defense Sciences Research Council**, Consultant to Booz Allen
· Council performed studies that were presented to DARPA Director & Office Directors

Fall '07 - Summer '12 **Co-Director,** Communications Sciences Institute, EE Dept. Exec. Comm., USC

Fall '07 -Summer '17 Visiting Professor, Dept. of Electronic & Electrical Eng., Univ. College London

Nov. '99 - Nov. '02 **Founder** & **CTO**, Phaethon Communications (technology acquired by Teraxion)
· Created the **ClearSpectrum®** dispersion compensator product line
· ClearSpectrum® presently deployed in many commercial 40-Gbit/s systems

Aug. '94 - Sept. '98 Associate Professor, Dept. of EE - Systems, USC

April '96 - June '04 Associate Director, Student Affairs, NSF-Sponsored Engineering Research Center in Integrated Media Systems, USC

Spring '98 **Visiting Fulbright Prof.**, Physics Dept., Weizmann Institute of Science, Israel

Apr. '94 – Present Associate Director, Center for Photonic Technology (CPT), USC

Jan. '92 - Present **Director, Optical Communications Laboratory**, USC

Jan. '92 - July '94 Assistant Professor, Dept. of EE - Systems, USC

Nov. '90 - Jan. '92 **Member of Technical Staff**, **Bell Comm. Research**, Photonics Research Dept.
· Fiber Optic Wavelength-Division-Multiplexed Communication Systems

Oct. '88 - Oct. '90 **Postdoctoral Member of the Technical Staff**, Crawford Hill Lab

	AT&T Bell Laboratories, Photonics Networks and Components Research Department, Postdoctoral Supervisor: **Dr. Ivan Kaminow**
Sept. '84 - Aug. '88	Graduate Research Assistant, **Columbia University**, Microelectronics Science Lab & NSF Center for Telecommunications Research
Fall '87	**Instructor**, **Columbia Univ.**, "Fundamentals of Circuits and Systems"
June '87	Visiting Scientist, Naval Research Laboratory - Modulation Spectroscopy
Summers '83, '84	Summer Technical Staff, **David Sarnoff Research Center, RCA Labs**
Fall '83	Teaching Assistant, Columbia Univ., Solid State Devices

HONORS:

Member, U.S. National Academy of Engineering ('16)

U.K. Royal Academy of Engineering ('10)

Of the 4 International Fellows elected from the US in '10, the other 3 were Drs. Howard Bruschi (former Westinghouse CTO), Robert Langer (MIT Institute Prof.) and Charles Vest (former MIT President and NAE President).

Ellis Island Medal of Honor ('20)

Awarded annually to a group of distinguished American citizens who exemplify a life dedicated to their community and the world at large.

IEEE Eric E. Sumner Award ('14)

One "Technical Field Award" in Communications from the entire IEEE.

Vannevar Bush Faculty Fellowship (U.S. DoD) ('16)

Formerly Defense Security Science & Eng. Faculty Fellowship (NSSEFF)

This is considered the DoD's most prestigious single-investigator research award.

J. J. Thomson Medal for Achievement in Electronics, Institution of Engineering & Technology (IET) ('16)

Civilian Service Commendation Medal, US Department of the Army ('21)

"For outstanding service as a member of the Army Science Board."

Distinguished Professor of Electrical and Computer Engineering at USC ('21)

Andrew and Erna Viterbi Endowed Professorial Chair at USC ('22)

Inaugural holder of endowed chair named for Dr. & Mrs. Viterbi.

Steven and Kathryn Sample Endowed Chair in Engineering at USC ('10)

Inaugural holder of endowed chair named after the former USC president.

Fellow of the National Academy of Inventors ('15)

***'09 Nobel Prize Ceremonies*, "invited foreign dignitary representing sciences"**

Thomas Egleston Medal for Distinguished Engineering Achievement ('17)

Highest honor given to a Columbia engineering graduate for a lifetime of achievement in the engineering profession by the Columbia University Engineering Alumni Association. Notable previous winners include Edwin H. Armstrong, Harvey S. Mudd, and Hyman G. Rickover.

Member, European Academy of Sciences and Arts ('21)

Albert Nelson Marquis Lifetime Achievement Award from Marquis Who's Who Publications Board ('17)

Viterbi School of Engineering Senior Research Award ('19)

Honorary Professor, Huazhong Univ. of Science & Technology (HUST) ('16)

HUST is ranked as of one of the top 10 universities in China.

Honorary Doctorate, *Honoris Causa*, Yeshiva University, Commencement ('12)

John Simon Guggenheim Foundation Fellowship ('12)

HONORS: (CONTINUED)

Presidential Faculty Fellows Award ('94)

30 awards are given annually by the **White House** to faculty in all areas of science and engineering. Sponsored by the NSF.

David & Lucile Packard Foundation Fellowship in Science & Eng. ('93)

20 awards given annually in science and eng.
One of three engineering awards.

NSF National Young Investigator Award ('92)

Formerly the **Presidential** YI Award.

Fulbright Foundation Senior Scholar Fellowship Award ('98)

Pursue research and lecturing at the Weizmann Institute of Science.

Optical Society of America (OSA) Paul Forman Eng. Excellence Award ('10)

One award given in 2010 for technical achievements in optical engineering.

IEEE Photonics Society Engineering Achievement Award ('11)

One award given in 2011 for technical achievements in photonics.

Optical Society of America (OSA) Leadership Award / New Focus Prize ('09)

One given for significant contribution to society or impact on optics.

SPIE President's Award ('13)

Fellow – American Physical Society (APS) ('21)

Fellow – American Assoc. for the Advancement of Science (AAAS) ('12)

Fellow – Institute of Electronic and Electrical Engineers (IEEE) ('04)

Fellow - Optical Society of America (OSA) ('96)

Fellow – Society for Photo-Instrumentation Engineers (SPIE) ('10)

Fellow - Institution of Engineering & Technology (IET) ('16)

Fellow – Asia-Pacific Artificial Intelligence Association (AAIA) ('22)

Best Contributed Technical Article, '01 Eddy Award, Pennwell Publications

One award from all 30 magazines in Pennwell's Advanced Technology Division.

Best Paper Award, IEEE Globecom Conference ('14)

Paper Selected as one of the '07 Highlights of *Nature Photonics* by its Editors

Paper Selected: NP, vol. **1**, no. 2, pp. 87-88, 2007.

USC Associates Award, University-Wide Creativity in Research ('12)

Two awards given from >2,000 professors at USC. Highest research award.

USC Associates Award, University-Wide Excellence in Teaching ('03)

Two awards given from >2,000 professors at USC. Highest teaching award.

Phi Kappa Phi Faculty Recognition Award ('16)

4 given at USC Academic Honors Convocation for significant scholarly work

IEEE Photonics Society **Distinguished Lecturer Award** (99', 00')

4 annual awards to present a distinguished lecture to local chapters worldwide.

HONORS: (CONTINUED)

IEEE Photonics Society Distinguished Service Award '03

1 annual award that recognizes exceptional individual contribution of service.

HP Labs Research Innovation Award '08, '09,'10 (see also *Grants*)

Northrop USC Outstanding Junior Eng. Faculty Research Award '94

Given to the **highest ranked** Asst. Prof. in the USC School of Engineering.

Phi Kappa Phi Academic Honor Society, Faculty Inductee '04

Northrop/USC Best Electrical Eng. Research Impact Faculty Award '05

TRW USC School of Engineering Best Teacher Award '99

Teaching award given to the highest ranked teacher in the School of Eng.

NSF Alan T. Waterman Award Finalist ('95, '96, and '97)

Outstanding Teaching Award, Elec. Eng. Dept., USC Eng. School ('95, '97)

The Okawa Foundation Research Award '00

Senior Member – IEEE ('94)

Taiwan Government Travel Grant ('08)

"Academician of Academia Sinica or International Renowned Scholar"

Edwin Howard Armstrong Foundation Memorial Award

Given to the **highest ranked** Columbia Univ. Elec. Eng. Masters Student

IEEE LEOS Figure Contest Winner (L. Zhang, et al.) ('08)

Fellow - Semiconductor Research Corporation - Doctoral Research

Representing Business Professionals from the State of California in Who's Who in America 2020 ('20)

Top 2% Most-cited Scientists Listed by Stanford University ('20)

Marquis Who's Who in America; … in the World; … in Science & Eng.

NATO/NSF Summer Fellowship (1985) - Italy

Columbia University Departmental Fellowship (9/83-5/86)

Dr. Samuel Belkin Scholar Award: Yeshiva University

Head Delegate to the Harvard Model United Nations from Yeshiva University

Magna Cum Laude: Yeshiva University

Student Council Member & Junior Class Vice-President: Yeshiva University

Valedictorian (high school); Editor-in-Chief, Yearbook (high school)

JOURNAL EDITOR:

Editor-in-Chief, OSA Optics Letters ('08-'13)

#1 ranked Optics publication for 2007 in terms of ISI Impact Factor

Editor-in-Chief, IEEE/OSA Journal of Lightwave Technology ('01-'06)

Editor-in-Chief, IEEE J. of Selected Topics in Quantum Electronics ('99-'01)

Associate Editor, IEEE/OSA J. of Optical Communications & Networking ('09-'11)

Associate Editor, IEEE Journal of Selected Areas in Communications,
Series on Optical Communications and Networks (2002-2009)

Associate Editor, IEEE/OSA Journal Lightwave Technology (1995-2000)

Guest Editor, MDPI Journal of Applied Sciences
Special Issue on Novel Insights into Orbital Angular Momentum Beams: From Fundamentals and Devices to Applications ('19)

Guest Co-Editor, Light: Science & Applications,
Special Issue, Twisted Light with Orbital Angular Momentum ('17)

Guest Editor, IEEE/OSA Journal of Lightwave Technology, Special Issue,
A Third of a Century of Lightwave Technology Jan. 1983-Apr. 2016 ('16)

Guest Editor, IEEE Journal of Selected Topics in Quantum Electronics,
Special Issue, Optical Waveguides: Technologies and Applications ('16)

Guest Editor, Nanophotonics (a de Gruyter journal),
Special Issue, Advances in Optical Fiber Technology ('14)

Guest Editor, IEEE Journal of Selected Topics in Quantum Electronics,
Special Issue, Optical Modulators - Technologies and Applications ('13)

Guest Editor, IEEE Journal of Selected Areas in Communications,
Special Issue, Next-Generation Broadband Optical Access Network Techn. ('10)

Guest Editor, Applied Physics-A (a Springer Verlag journal),
Special Issue on Photonic Interconnects (June 2009)

Guest Editor, IEEE/OSA Journal of Lightwave Technology,
Special Issue on the 25th Anniversary of JLT (May '08)

Guest Editor, OSA Journal of Optical Networking,
Special Issue on Optical Code-Division-Multiple-Access (2007)

Guest Editor, IEEE Journal of Selected Topics in Quantum Electronics, Special Millennium Issue (Dec. 2000)

Guest Editor, IEEE Journal of Quantum Electronics
Focus Issue on Ultra-High-Bandwidth Optical Transmission Systems (Nov. 1998)

Guest Editor, IEEE/OSA Journal of Lightwave Technology & IEEE Journal of Selected Areas in Communications, Joint Special Issue, Multiple-Wavelength Technologies and Networks (June '96)

PROFESSIONAL ACTIVITIES:

Panel Member, Optica Fellow Nominations Webinar ('25)

Member, Technical Program Committee, Optical Sensing and Precision Metrology (OE305), SPIE Photonics West, San Francisco ('25, '26)

Member, the Frederic Ives Medal/Jarus W. Quinn Prize Selection Committee ('25-'27)

Member, National Academy of Engineering (NAE) Section 7 Search Committee ('24-'25)

Member, IEEE Edison Medal Selection Committee ('22-'24)

Member, External Advisory Committee,
Department of Electrical & Computer Engineering, Johns Hopkins University ('24-'27)

Co-Chair, Workshop on Orbital Angular Momentum Transmission,
IEEE International Conference on Communications (ICC), Denver ('24)

Member, International Scientific Committee,
International Conference on Optical Angular Momentum (ICOAM), South Africa ('24)

Member, Program Committee,
OPTICA Topical Meeting on Adaptive Optics: Methods, Analysis, and Applications ('24)

Co-Chair, International Workshop on High Capacity Wireless Communications, IEEE GLOBECOM ('23)

Member, Search Committee for Editor-in-Chief for the SPIE Journal of Nanophotonics ('23)

General Chair,
OptoElectronics and Communications Conference (OECC), Shanghai ('23)

Member, Technical Program Committee, Conference on High Contrast Metastructures XII, SPIE Photonics West ('23)

Co-chair, Yeshiva University Ad-Hoc Committee,

PROFESSIONAL ACTIVITIES: (CONTINUED)

Explore the possibility of instituting and implementing a doctoral program in Applied Math (YUCAM) ('23)

Chair, Selection Committee for the Optica Foundation Challenge Contest ('22-'25)

Co-Chair, Workshop on High-Capacity Wireless Communications
IEEE Global Communications Conference (GLOBECOM) ('22)

Chair, External Review Panel on Electronics Science and Technology Focus Area, Naval Research Laboratory ('22)

Co-Chair, Technical Program Committee,
Workshop on Orbital Angular Momentum Transmission, IEEE International Conference on Communications (ICC) ('22)

Member, Tingye Li Memorial Scholarship Nomination Review Committee,
Photonics Society of Chinese Heritage (PSC) ('20-'25)

Workshop Participant, Crystal Ball Workshop,
The U.S. OSD R&E, USSF, and U.S. AFRL ('22)

Member, Organizing Committee, ComSoc Student Conference,
IEEE WCNC 2022 ('22)

Co-Lead of Photonics Group,
Future Directions Workshop on Wireless Communications: XG and Beyond,
Basic Research Office of the Office of the Under-Secretary of Defense,
Arlington, VA ('22)

Member, International Advisory Committee, Photonics Research Institute,
Hong Kong Polytechnic University ('22-'24)

General Co-Chair,
Asia Communications and Photonics Conference (ACP), Shanghai ('21)

Optica (formerly The Optical Society (OSA)) (Membership ~20,000)

Past-President (2017)
President (2016)

PROFESSIONAL ACTIVITIES: (CONTINUED)

President-Elect (2015)
Elected Vice President (2014)

U.S. National Academy of Engineering, Member Search Committee, Section 7,
- **Chair** (2018)
- **Vice-Chair** (2017)
- **Past Chair** (2019)
- Member ('20-'24)

Member, Technical Program Committee,
Workshop on Orbital Angular Momentum Transmission, IEEE International Conference on Communications (ICC) ('21)

Member, Technical Program Committee,
Adaptive Optics: Methods, Analysis and Applications, OSA Imaging and Applied Optics Congress ('20)

Co-Chair, Workshop on High-Capacity Wireless Communications
IEEE Global Communications Conference (GLOBECOM) ('20)

Member, Review Panel on Engineering Sciences at the Army Research Office, Laboratory Assessments Board, US National Academies ('20)

Member, Advisory Board, Advances in Optics and Photonics (AOP) ('20-'23)

Member, Technical Program Committee,
Workshop on Orbital Angular Momentum, IEEE International Communications Conference (ICC) ('20)

Member, Technical Program Committee,
OSA Topical Meeting on Adaptive Optics, OSA Imaging and Applied Optics Congress, Vancouver, Canada ('20)

Member, Technical Program Committee,
SPIE Photonics West, Advanced Optical Techniques for Quantum Information, Sensing, and Metrology conference ('20)

Co-Chair, Workshop on High-Capacity Point-to-Point Wireless Communications Program,
IEEE Global Communications Conference (GLOBECOM) ('19)

PROFESSIONAL ACTIVITIES: (CONTINUED)

Co-Chair, Workshop on Electromagnetic Wave Transmission with Orbital Angular Momentum,
IEEE International Conference on Communications (ICC) ('19)

Member, Planning Committee,
DMMI Workshop on Domestic Manufacturing Capabilities for Critical DoD Applications: Emerging Needs in Quantum-enabled Systems, National Academies ('19)
Member, National Academies Review Panel
"***An Assessment of the National Institute of Standards and Technology Physical Measurements Laboratory***" ('19)

Member, Distinguished Service Award Committee,
IEEE Photonics Society ('19)

Honorary Chairs,
Asia Communications and Photonics Conference (ACP), Chengdu ('19)

Co-Chair, Charles Kao's Symposium on Optical Fiber Communications,
Asia Communications and Photonics Conference (ACP), Chengdu ('19)

Mentor, Undergraduate Engineering/Robotics Club
Yeshiva Univ. (Yeshiva College and Stern College) ('18-'19)

Member, Department of Defense Bush Fellows Research Study Team ('18-'20)

Member, OSA Nominating Committee ('17-'19)

Member, Editorial Board,
Progress in Electromagnetics Research (PIER) ('17-'23)

Member, Independent Technical Advisory Board,
DoD Applied Research for the Advancement of S&T Priorities (ARAP)
Defense Optical Channel Program (DOC-P) ('17-'19)

Member, International Advisory Committee (IAC),
The Optics & Photonics Taiwan ('17)

PROFESSIONAL ACTIVITIES: (CONTINUED)

Chair, Committee,
IEEE Eric Sumner Technical Field Award ('16-'18)

Member, SRI Technology Council ('16-'19)

Member, Technical Program Committee, Subcommittee Photonics in Switching System and Related Technologies, Photonics in Switching ('16)

General Co-Chair,
IEEE/OSA/SPIE Asia Communications & Photonics Conference, Wuhan ('16)

Co-Organizer, Workshop on Twisting Light with Orbital Angular Momentum (OAM): Advances and Opportunities,
IEEE/OSA/SPIE Asia Communications & Photonics Conf (ACP), Wuhan ('16)

National Spectrum Consortium (NSC) Representative, Subject Matter Expert, Communications Assessment Working Group ('16)

Member, Technical Program Committee,
SPIE Photonics West, Conference on Advances in Photonics of Quantum Computing, Memory, and Communication ('16-'19)

Member, Conference Program Committee,
SPIE Photonics West, High-Contrast Metastructures IV Conference ('15-'20)

Chair, Steering Committee,
National Photonics Initiative (NPI) ('15-'17)

Member, Organizing Committee,
Conference FIAT LUX on the International Year of Light (IYL), Rome ('15)

Member, International Advisory Board,
School of Engineering Sciences (SES) of Huazhong University of Science and Technology (HUST), Wuhan, China ('14-'17)

Member, Technical Program Committee,
European Conference on Optical Communications (ECOC) ('13, '14, '15)

Member, Technical Program Committee, Systems Subcommittee,
Photonics in Switching ('13, '14)

PROFESSIONAL ACTIVITIES: (CONTINUED)

Member, **U.S. Army Science Board** ('14-'20)

Member, **Foundation Board of Directors,** OSA ('14)

Member, **Advisory Board**, National Science Review ('14)

Consultant Member, U.S. Army Science Board ('13-'14)

Co-Organizer, Section on Optics and Photonics: An International Perspective, American Association for the Advancement of Science (AAAS) Annual meeting, Chicago ('14)

Chair-Elect and Member, Steering Committee
National Photonics Initiative (NPI) ('13-'14)

Chair, Unclassified Technical Program,
IEEE MILCOM (San Diego, CA) (2013)

Co-Chair, U.S. National Academies Committee for NRC Study,
"***Optics and Photonics: Essential Technologies for Our Nation"*** (2011-2012)
Chair, Steering Committee,
APS/IEEE/OSA Conf. on Lasers & Electro-Optics (CLEO) ('08-'10&'10-'12)
Member, **Defense Science Research Council**,
Council submits reports to DARPA Director and Office Directors ('09-'14)

Elected Member-at-Large, Section on Engineering,
American Association for the Advancement of Science (AAAS) ('12-'16)

Member, 2015 IEEE Eric E. Sumner Award Committee ('15-'16)

Member, Steering Committee,
Optoelectronics Communications Conference (OECC) ('14)

Member, Technical Program Committee,
22nd Wireless and Optical Communication Conference ('13)

Member, Technical Program Committee, Systems Subcommittee,
Photonics in Switching ('13, '14)

PROFESSIONAL ACTIVITIES: (CONTINUED)

Member, External Advisory Committee,
Department of Electrical & Computer Eng., Johns Hopkins Univ. ('09-'21)

Member, International Advisory Committee,
International Conference on Fiber Optics and Photonics, Madras ('12)

Member, Technical Program Committee,
European Conference on Optical Communications (ECOC) ('12)

Member, Technical Program Committee, Globecom GC12,
Optical Networks & Systems Symposium (ONS) (2012)

Member, Technical Program Committee, Systems Subcommittee,
Photonics in Switching 2012

National Academy of Engineering Representative,
US Advisory Committee, International Commission on Optics ('10-'12,'13-'15)

Co-Chair, Technical Program Committee, SPIE Photonics West,
Conference on High Contrast Metastructures (OE131), San Francisco ('12)

General Co-Chair, OSA Topical Meeting on
Signal Processing in Photonic Communications (SPPCOM), Toronto (2011)

IEEE Photonics Society (Membership~7,000)
(Formerly the IEEE Lasers & Electro-Optics Society (LEOS))

President (2006-2007)
Past-President (2008-2009)
President-Elect (2004-2005)

Member, Strategic Planning Committee,
IEEE Technical Activities Board (2011-2013)

Member, Board of Editors, OSA ('08-'13)

Chair, Awards Committees, IEEE Photonic Society (2010)

Member, Technical Program Committee, IEEE Photonics Society,
Summer Topical Meeting on Terabit Optical Ethernet, Montreal (2011)

PROFESSIONAL ACTIVITIES: (CONTINUED)

Member, International Advisory Committee,
IQEC / CLEO Pacific Rim Conference, Sydney (2011)

Member, Technical Program Committee,
7th Workshop on Fibre Optics& Passive Components, July, Montreal (2011)

Member, International Advisory Committee,
1st International Postgraduate Student Conference (PGSC), Singapore (2011)

Member, Conference Program Committee, SPIE Photonics West,
Free-Space Laser Communication Technologies XXIII (2011)

Program Co-Chair, OSA Topical Meeting on
Signal Processing in Photonic Communications (SPPCOM), Germany (2010)

Symposium Co-Chair, European Conf. on Optical Communications (Italy) ('10)
C. Kao's Nobel Prize & Early Development of Optical Fibres and Optical Comm.

Member, Technical Program Committee,
European Conference on Optical Communications (ECOC) ('00, '11, '12)

Chair ('08) and Member ('10), Int'l Advisory Committee,
IEEE Photonics Global Singapore

General Co-Chair, IEEE Photonics in Switching Conference, Pisa, Italy (2009)

Member, Board of Visitors,
Army Research Office (ARO) Electronics Division ('10)

Member, Technical Program Committee,
OSA Topical Meeting on Photonics in Switching, Monterey, CA ('10)

Member, Technical Program Committee,
Optical Networks & Systems Symposium, IEEE Globecom, Miami ('10)

Member, International Advisory Committee (IAC),
BGPP'10 (Bragg Gratings, Photosensitivity, & Poling), Germany ('10)

PROFESSIONAL ACTIVITIES: (CONTINUED)

Member, International Advisory Committee,
3rd Int'l Photonics & OptoElectronics Meetings (POEM), Wuhan ('10)

Co-Chair, Technical Subcommittee,
Optical Transmission Systems, Switching and Subsystems,
IEEE/OSA/SPIE Asia Communications & Photonics Conf (ACP), Shanghai ('09)
Member, Conference Committee, IEEE/LEOS Summer Topical Meeting,
The Future Global Network, CA (2009)

Member, Conference Committee, IEEE/LEOS Summer Topical Meeting,
Optical Code Division Multiple Access (OCDMA), CA (2009)

Member, Publication Advisory Board,
OSA's Advances in Optics & Photonics (AOP) ('08-'09)

Member, Editorial Advisory Board, Lightwave Magazine, Pennwell Publishers

Member, Int'l Advisory Committee,
8th Int'l Conf. on Optical Communications & Networks (ICOCN), Beijing ('09)

Member, IEEE Photonics Soc. Distinguished Service Award Committee ('08,'09)

Member, Technical Program Committee, Globecom,
Optical Networks & Systems Symposium (ONSS), Hawaii (2009)

Member, Conference Program Committee, SPIE Photonics West,
Advanced Optical Concepts in Quantum Computing, Memory, & Comm. (2009)

Member, Conference Program Committee, SPIE Photonics West,
Free-Space Laser Communications, CA (2009)

Member, Tech. Prog. Comm., Symp. on Optical Fiber Devices & Applications,
Int'l Conf. on Materials for Advanced Technologies (ICMAT), Singapore (2009)

Member, OSA Review Committee of the J. of the Optical Society of Korea ('09)

PROFESSIONAL ACTIVITIES: (CONTINUED)

Program Co-Chair, OSA Topical Meeting on
Coherent Optical Technologies and Applications (COTA) (2008)

Member, Technical Program Committee,
CS/IEICE Int'l Conference on Photonics in Switching, Sapporo, Japan (2008)

Member, Tech. Prog. Comm., ONS (Optical Networks & Systems Symposium),
IEEE Int'l Conference on Communications (ICC) (2008, 2009)

Member, Optical Network & Broadband Access Subcommittee,
Opto-Electronics and Communications Conference, Sydney (2008)

Chair, Ethics and Conflict Resolution Committee,
IEEE Technical Activities Board (TAB) (2007)

Member, Strategic Planning Committee,
IEEE Technical Activities Board (2008-2010)

Member, New Initiatives Committee, IEEE-Wide Committee (2008)

General Co-Chair, OSA Topical Meeting on Slow & Fast Light (2007)

Member, Ethics and Member Conduct Committee Hearing Panel,
IEEE Institute-Wide (2006-2008)

Member**,** Frederic Ives Medal/Jarus Quinn Endowment Award Committee,
highest award of the Optical Society of America (OSA) ('06,'07)

Member, International Program Committee (IPC),
International Association of Science & Technology for Development (IASTED)
Int'l Conf. on Wireless and Optical Communications (WOC), Quebec 2008
Int'l Conf. on Communication, Internet & Info. Tech. (CIIT), Banff (2007)
Int'l Conf. on Power and Energy Systems, Thailand (2007)
Int'l Conf. on Wireless and Optical Communications, Montreal (2007)

Co-Organizer, Workshop on Slow Light,
Conference on Optical Fiber Communications 2007

Chair, Steering Committee, AOE Expo and Conference, Shanghai (2007)

PROFESSIONAL ACTIVITIES: (CONTINUED)

Program Co-Chair, OSA Topical Meeting on Slow & Fast Light (2006)

Chair, Communications Subcommittee, OSA Topical Meeting
Coherent Optical Technologies and Applications (COTA) (2006)

Co-Chair, Science and Engineering Council (2001-2003),
Optical Society of America (OSA) (Total Membership~15,000)

Workshop Co-Chair, The Future of Optical Telecommunications,
European Conf. on Optical Communications (Cannes) ('06)

Chair, External Int'l Review Panel, Research Program in Network Technol.,
National ICT Australia (NICTA), University of Melbourne ('06-'07)

Member, Technical Program Committee, IEEE LEOS Summer Topical Meetings

Quantum Communications in Telecom Networks (2006)

Member**,** Board of Directors, NSERC Canada Research Center,
Agile All-Photonics Networks (AAPN) ('05-'10)

Chair, Membership Committee,
IEEE Lasers & Electro-Optics Society (LEOS) ('04-'06)
Member, Technical Program Committee, Photonics in Switching,
OSA Topical Meeting, Greece (2006)

Member, International Program Committee, IASTED,
Int'l Conf. on Comm., Internet and Information Tech., St. Thomas, USVI ('06)

Chair, Distinguished Service Award Committee,
IEEE Lasers & Electro-Optics Society (LEOS) ('04,'05,'06)

Chair, Planning Committee, Science & Engineering Council,
Optical Society of America (OSA) ('04)

Member, Technical Program Committee, Optical Signal Processing,
IEEE LEOS Summer Topical Meetings (2005)

Member, Technical Program Committee,

PROFESSIONAL ACTIVITIES: (CONTINUED)

Photonic Technologies for Communications, IEEEGlobecom, St. Louis (2005)

Member, Technical Prog. Committee, Optical Systems & Networks Symposium
IEEE International Communications Conference (ICC) 2006, Turkey

Member, International Steering Committee, Asia-Pacific Optical and Wireless
Communications Conference (APOC), Beijing, Shanghai, Korea ('04,'05,'06)

Member, International Advisory Committee,
Symp. on Technology Fusion of Optoelectronics and Communications (STFOC),
International Conference on Photonics ('05)

Steering Committee, Conf. on Optical Fiber Communications **(OFC)** (99-04)
Budget Subcommittee ('02-'03)
Long-Range Planning Committee ('03-'04)

Vice-President, Technical Affairs (1996-1999),
IEEE Lasers & Electro-Optics Society (LEOS) (Membership~7,500)
Responsible for all Technical Affairs, including Technical Council, Standards Committees, & Gov't Liaison Committees

Conference on Lasers and Electro-Optics (CLEO)
(>1000 invited & contributed papers, >6000 attendees)

General Co-Chair (2003)
Program Co-Chair (2001)
Member, Long Range Planning Subcomm., Steering Committee (‘03)
Co-Chair, Lasers and Electro-Optics Applications Program (2002)
Committee Chair, Lightwave Communications (2000)
Member, Program Committee ('97, '98, '99)

Member, **Board of Directors, OSA (2001-2003)**

Workshop Co-Chair, Ultra-High Capacity Optical Communications and Networking: Challenges in Broadband Optical Access, Materials Processing, and Manufacturing, **National Science Foundation (2002)**

PROFESSIONAL ACTIVITIES: (CONTINUED)

Chair, Distinguished Traveling Lecturer Awards Committee**,** IEEE LEOS **('02)**

Member**,** Curriculum Committee**,** NSF-Funded Advanced Technology Education

(ATE) Planning Grant for the California Optical and Photonics Technology Education Center (Cal-OPTEC) at San Jose City College **('03-'04)**

Member, Technical Program Committee, Optical Interconnects,
IEEE LEOS Summer Topical Meeting '04

Member, Technical Program Committee, IASTED,
Int'l Conf. on Optical Communication Systems & Networks, Banff, Canada (04)

Member, **Technical Program Committee**, Photonics In Switching, Paris ('03)

Member, International Advisory Committee, Asia-Pacific Optical and Wireless

Communications Conference (APOC), Wuhan, China ('03)

Member, **Advisory Board**, Photonics Technology Access Program (PTAP),
Optoelectronics Industry Development Association

Member, **Public Policy Committee**, OSA ('03)

Member, **Publications Council**, Liason to Science & Eng. Council, OSA ('03)

Member, **Board of Editors**, OSA ('01-'6)

Member, **Finance Committee**, OSA ('02-'04)

Member, **Nominating Committee for President and Directors**, OSA ('00)
Elected Member of the Board of Governors, IEEE LEOS ('98-'01)
Member, Technical Program Committee, IASTED,
Int'l Conf. on Comm., Internet & Information Technology, Scottsdale, AZ ('03)

Member, **Technical Program Committees**,
IEEE LEOS Summer Topical Meetings '02:

(1) Fast Optical Signal Processing in Optical Transmission Committee
(2) Dynamic Enablers of Next-Gen Optical Comm. Systems Committee

PROFESSIONAL ACTIVITIES: (CONTINUED)

Steering Committee Member,
IEEE Workshop on Fiber & Optical Passive Components, Sept., Italy (02,04,05)

Member, Technical Program Committee, IASTED,
Wireless & Optical Comm. Conference, Banff, Canada (2002)

IEEE Lasers and Electro-Optics Society (LEOS) Annual Meeting
(570 invited & contributed papers, ~ 800 attendees)

General Chair (1999)
Program Chair (1997)

Program Co-Chair, OSA Annual Meeting 2001

OSA Topical Meeting on Optical Amplifiers and Their Applications

General Co-Chair (1999)
Technical Co-Chair (1998)
Chair, Systems Applications (1997)
Program Committee Member (1996)

Chair, Photonics Division, Technical Council,
Optical Society of America ('98-'00)

Workshop Co-Chair, The Future Revolution in Optical Communications & Networks, **National Science Foundation** (2000)

Member, Technical Program Committee, IEEE Microwave Photonics Conf. ('01)

Member, Optoelectronics Task Force, Semiconductor Research Corp. ('01)
Member, Technical Program Committee, CLEO Pacific Rim ('01)

Member, Technical Program Committee,
Optoelectronics Communications Conference (OECC), Sydney ('01)

Member, Technical Program Committee, Optical Networking Subcommittee,
Asia-Pacific Optical and Wireless Communications Conference (APOC)

PROFESSIONAL ACTIVITIES: (CONTINUED)

(1) Beijing ('01)
(2) Shanghai ('02)

Member, Technical Program Committee, SPIE, Photonics West,
WDM and Photonic Switching Devices for Network Applications, San Jose ('01)

Member, Technical Program Committee,
International Conference on Fiber Optics and Photonics, Calcutta ('01)

Chair, Standing Tech. Committee**,**
Optical Networks, **IEEE LEOS (1996-1999)**

Co-Chair, IEEE LEOS Summer Topical Meeting '98,
Broadband Optical Networks: An Emerging Reality

Member, **Scientific Advisory Board,** U.S./Japan Joint Optoelectronics Project, **Optoelectronics Industrial Development Association**

Workshop Co-Organizer, Conference on Optical Fiber Communications
(1) Passive Optical Devices ('98)
(2) Systems Software Modeling ('98,'99,'00,'01)

Member, US Advisory Committee**,**
International Commission on Optics ('97-'02)

Member, IEEE Tech. Activities Board Subcommittee on
New Technology Directions '96, '97

Conference Program Committee, **SPIE**, Optical Comm., Taiwan ('98)

General Co-Chair, IEEE LEOS Summer Topical Meeting '97, Technologies for the Global Information Infrastructure

Invited Workshop Participant, Frontiers in Engineering,
National Academy of Engineering (nominations of engineers <40 years old)

Chair, Optical Communications Technical Committee**, IEEE LEOS** ('94-'96)

Vice-Chair, Optical Communications Group, Technical Council,

PROFESSIONAL ACTIVITIES: (CONTINUED)

Optical Society of America (OSA) ('93-'97)

Conference General Co-Chair, IEEE LEOS Summer Topical Meeting '95, Technologies for the Global Information Infrastructure

Program Committee, System Technologies, Conference on Optical Fiber Communications (OFC) ('96-'98)

Program Committee, IEEE LEOS Summer Topical Meeting ('96), Broadband Optical Networks and Their Enabling Technologies

Chair, Optical Communications Committee, LEOS Annual Meeting ('94-'96)

StandingTechnical Committee, IEEE LEOS, Optical Networks ('93-'96)
Program Chair, Telecommunications Engineering, Society of Photo-Instrumentation Engineers **(SPIE)**, Photonics West ('95)

Chair, Conf. on Emerging Technologies for All-Optical Networks, SPIE ('95-'96)

Chair, Information & Comm., NSF Forum on Optical Science & Eng. ('95)

Chair, Symposium, System Modeling, Conf. on Integrated Photonics Res. '96

Technical Program Committee, Committee on Numerical Modeling, IPR '96

Awards Committee Member, **IEEE LEOS Fellows Selection Committee** ('00)

Awards Committee Member, IEEE LEOS Distinguished Traveling Lecturer Award ('01, '03, '04)

Awards Committee Member, IEEE LEOS Wm. Streifer Scientific Achievement ('96, '03, '04, '05)

Awards Committee Member, IEEE LEOS Quantum Electronics Award ('97)

Technical Committee, IEEE Interconnects Workshop ('96)

PROFESSIONAL ACTIVITIES: (CONTINUED)

Optical

Chair, Panel on Optical Information and Communications, Workshop on Science and Engineering, National Science Foundation ('94)

Technical Program Committee, Symposium Organizer,
Optical Society of America Annual Meeting:
'98 (WDM Systems)
'96 (Optical Networks)
'95 (Wavelength Conversion Techn.)
'92 (EDFA Appl.: Distribution)

Conf. Program Committee, **SPIE**,
Components for WDM ('95,'99,'00,'01,'02)

Program Committee, IEEE/ACM/SPIE Workshop on Optical Networks, ('00)

Standing Technical Committee, IEEE LEOS, Optical Comm. ('92-'94)

Program Committee, IEEE LEOS Ann. Meeting '92,'93; Lightwave Comm.

Review Panel Member, NSF, Optical Communications
('92,'93,'94,'95,'97,'98,'03)

TEACHING:

STUDENT EVALUATIONS

I. Univ. of Southern California (5.0 is highest possible score)

Average student evaluations for all USC courses since 1992: 4.94/5.0

Undergraduate Course: Introduction to Communications (EE 467)

1. Spring '25: **4.89/5.0**, 10 students, 9 had evaluated
2. Spring '24: **5.0/5.0**, 8 students, 7 had evaluated
3. Spring '23: **5.0/5.0**, 8 students, 8 had evaluated
4. Spring '22: **5.0/5.0**, 11 students, 11 had evaluated
5. Spring '21: **4.70/5.0**, 11 students, 10 had evaluated
6. Spring '20: **4.95/5.0**, 29 students, 21 had evaluated
7. Spring '19:**4.83/5.0,** 21 students, 18 had evaluated
8. Spring '18:**5.0/5.0,** 27 students, 16 had evaluated
9. Spring '17:**4.91/5.0,** 15 students, 11 had evaluated
10. Spring '16:**4.96/5.0,** 27 students, 27 had evaluated
11. Spring '15:**4.96/5.0,** 27 students, 24 had evaluated
12. Spring '14:**4.84/5.0,** 25 students, 19 had evaluated
13. Spring '13:**5.0/5.0,** 21 students, all had evaluated
14. Spring '12:**4.94/5.0,** 20 students, 18 had evaluated
15. Spring '11:**5.0/5.0,** 22 students, 18 had evaluated
16. Spring '10:**5.0/5.0,** 19 students, 16 had evaluated
17. Spring '09:**5.0/5.0,** 10 students, all had evaluated
18. Fall '07: **5.0/5.0,** 11 students, all had evaluated
19. Fall '06: **5.0/5.0,** 10 students, 9 had evaluated
20. Fall '04: **5.0/5.0,** 11 students, all had evaluated
21. Fall '03: **5.0/5.0,** 7 students, all had evaluated
22. Fall '02: **5.0/5.0,** 11 students, all had evaluated
23. Fall '01: **5.0/5.0,** 21 students, all had evaluated
24. Fall '00: **5.0/5.0,** 20 students, all had evaluated
25. Fall '99: **5.0/5.0,** 22 students, 21 had evaluated
26. Fall '98: **5.0/5.0,** 18 students, all had evaluated
27. Fall '97: **5.0/5.0,** 22 students, all had evaluated
28. Fall '96: **4.92/5.0,** 14 students, all had evaluated
29. Fall '95: **5.0/5.0,** 8 students, all had evaluated
30. Fall '94: **5.0/5.0,** 9 students, all had evaluated

31. Fall '93: **5.0/5.0,** 8 students, all had evaluated
32. Fall '92: **5.0/5.0,** 13 students, all had evaluated

Graduate Course: Optical Fiber Communications Systems (EE 558)

1. Fall '19: **4.95/5.0**, 20 students, 19 had evaluated
2. Fall '18: **4.91/5.0,** 25 students, 23 had evaluated
3. Fall '17: **4.95/5.0,** 24 students, 22 had evaluated
4. Fall '16: **4.94/5.0,** 22 students, 17 had evaluated
5. Fall '15: **5.0/5.0,** 24 students, 19 had evaluated
6. Fall '14: **4.95/5.0,** 29 students, 22 had evaluated
7. Fall '13: **5.0/5.0,** 26 students, 24 had evaluated
8. Fall '11: **4.88/5.0,** 29 students, 24 had evaluated
9. Fall '10: **4.96/5.0,** 35 students, 28 had evaluated
10. Fall '09: **4.97/5.0,** 31 students, 30 had evaluated
11. Fall '08: **4.94/5.0,** 33 students, all had evaluated
12. Spring '08: **4.88/5.0,** 28 students, 25 had evaluated
13. Spring '07: **4.92/5.0,** 29 students, 24 had evaluated
14. Spring '06: **5.0/5.0,** 20 students, 17 had evaluated
15. Spring '05: **4.97/5.0,** 31 students, 29 had evaluated
16. Spring '04: **4.91/5.0,** 24 students, 23 had evaluated
17. Spring '03: **4.88/5.0,** 26 students, 25 had evaluated
18. Spring '02: **4.73/5.0,** 30 students, all had evaluated
19. Spring '01: **5.0/5.0,** 25 students, 24 had evaluated
20. Spring '00: **4.95/5.0,** 22 students, all had evaluated
21. Spring '99: **5.0/5.0,** 17 students, all had evaluated
22. Spring '97: **4.79/5.0,** 23 students, all had evaluated
23. Spring '96: **4.93/5.0,** 29 students, all had evaluated
24. Spring '95: **4.97/5.0,** 31 students, all had evaluated
25. Spring '94: **4.93/5.0,** 28 students, 27 had evaluated
26. Spring '93: **4.93/5.0,** 40 students, all had evaluated
27. Spring '92: **4.72/5.0,** 19 students, all had evaluated

II. Columbia Univ. (while a graduate student) (10.0 is highest possible score)

Undergraduate Course: Fundamentals of Circuits and Systems

1. Fall '87: **8.3/10.0**, 110 students, 93 had evaluated

Ph.D. THESES ADVISED AND GRANTED:

1. Syang-Myau Hwang, 10/95, "System Performance and Channel Equalization of Optically-Amplified WDM Long-Distance Links and Ring Networks"
2. Andrew David Norte, 1/96, "Experimental Demonstrations of Wavelength Routing Functions for an All-Optical Wavelength-Division-Multiplexed Fiber Optic Communication Network Switching Node"
3. William Shieh, 3/96, "Experimental and Theoretical Study of All-Optical Wavelength Shifting Techniques by using Semiconductor Optical Amplifiers"
4. Eugene Park, 3/96, "Applications of All-Optical Wavelength Shifting using Semiconductor Optical Amplifiers for Switching and Routing Functions in a Dynamically Reconfigurable Wavelength-Division-Multiplexed Fiber-Optical Communication Network"
5. James E. Leight, 8/96, "System and Network Implementations of 2-D Multiple-Plane Wavelength-Division-Multiplexed Optical Interconnects"
6. J.-C. Wu, 8/96, "Protocols and Design Tradeoffs for Packet-Switched WDM Networks with Large Tuning Latencies"
7. M. Imran Hayee, 12/98, "Modeling of Dispersion and Nonlinearities in High-Performance Transmission"
8. Jin-Xing Cai, 6/99, "Experimental Demonstrations of Techniques to Improve System Performance in Non-Static Optical Wavelength Division Multiplexing Systems and Networks"
9. Kai-Ming Feng, 6/99, "System Performance Improvement in Optical Wavelength Division Multiplexing Systems and Networks using Optical Gratings"
10. Jong-Jin Yoo, 12/99, "System Performance and Network Structure of Two-Dimensional Multiple-Plane WDM Optical Interconnects"
11. Steve A. Havstad, 9/00, "Generation, Filtering, and Applications of Subcarriers in Optical Communication Systems"
12. Sanggeon Lee, 9/00, "Characterization and Compensation of Polarization Mode Dispersion and Chromatic Dispersion Slope Mismatch for High Bit-Rate Data Transmission"
13. Reza Khosravani, 10/00, "Reduction of Signal Degrading Effects in Wavelength Division Multiplexed Systems and Networks"
14. Mustafa C. Cardakli, 1/01, "Optical Techniques to Implement Networking Functions in Dynamically Reconfigurable Wavelength-Division-Multiplexed Fiber-Optic Communication Networks"
15. Olaf H. Adamczyk, 2/01, "Experimental Demonsstration of Techniques to Improve System Performance in Fiber-Optic Communication Systems using Subcarrier-Multiplexed and Digital Baseband Signals"

16. Zhongqi Pan, 11/02, "Overcoming Fiber Dispersive Effects in High-Speed Reconfigurable Multi-Wavelength Optical Systems and Networks"
17. Asaf B. Sahin, 4/03, "Experimental Demonstration of Techniques to Improve System Performance in Non-Static Microwave Frequency Analog and Digital Signal Transmission over Fiber-Optic Communication Systems"

Ph.D. THESES ADVISED AND GRANTED: (CONTINUED)

18. Deniz Gurkan, 5/03, "Experimental Demonstrations of Optical Networking Functions forWavelength-Division-Multiplexed (WDM) Optical Networks"
19. Yong-Won Song, 10/03, "Mitigation of Signal Degradations in Reconfigurable Wavelength-Division-Multiplexed Fiber-Optic Communication Systems"
20. S.M. Reza Motaghian Nezam, 4/04, "Chromatic and Polarization Mode Dispersion Monitoring for Equalization in Fiber-Optic Communication Systems"
21. Paniz Ebrahimi, 5/04, "Design and Implementation of Novel Optical Subsystems for Enhancing Spectral Efficiency, Security, and Performance of High-Speed Wavelength Division Multiplexed and Optical Code-Division-Multiple-Access Systems"
22. Lian-Shan Yan, 11/04, "Investigation of Degrading Effects and Performance Optimization in Long-Haul WDM Transmission Systems and Reconfigurable Networks "
23. John E. McGeehan, 5/05, "Experimental Demonstration of Optical Router and Signal Processing Functions in Dynamically Reconfigurable Wavelength-Division-Multiplexed Fiber Optic Networks"
24. Changyuan Yu, 8/05, "Dispersive and Nonlinear Effects in High-Speed Reconfigurable WDM Optical Fiber Communication Systems"
25. Yan Wang, 12/05, "Monitoring and Utilization of Dispersive and Nonlinear Effects in High-Speed Reconfigurable WDM Optical Fiber Networks"
26. Ting Luo, 2/06, "Management of Dispersion, Nonlinearity and Polarization-Dependent Effects in High-Speed Reconfigurable WDM Fiber Optic Communication Systems"
27. Saurabh Kumar, 11/06, "Optical Signal Processing For High-Speed, Reconfigurable Fiber Optic Networks"
28. Poorya Saghari, 11/06, "Techniques for Increasing the Number of Users in Dynamically Reconfigurable Optical Code Division Multiple Access Systems and Networks"
29. Louis C. Christen, 9/08, "Detection and Optical Signal Processing using Phase Based Optical Modulation Formats"
30. Bo Zhang, 12/08, "Nonlinear Optical Signal Processing For High-Speed, Spectrally Efficient Fiber Optic Systems and Networks"

31. Lin Zhang, 11/10,"Silicon Integrated Devices for Optical System Applications"
32. Scott R. Nuccio, 12/10, "Applications of All Optical Signal Processing for Advanced Optical Modulation Formats"
33. Irfan Fazal, 7/11, "Optical Signal Processing for Enabling High-Speed, Highly Spectrally Efficient and High Capacity Optical Systems"
34. Jeng-Yuan Yang, 9/11, "Optical Performance Monitoring and Signal Processing to Enable Robust and Reconfigurable Optical Networks"
35. Xiaoxia Wu, 10/11, "High-Speed Optical Signal Processing and Performance Monitoring Towards Tbit/s Optical Networks"

Ph.D. THESES ADVISED AND GRANTED: (CONTINUED)

37. Omer Yilmaz, 12/11, "Advanced Nonlinear Optical Signal Processing Techniques For High Speed, ReconfigurableOptical Fiber Networks"
38. Yang Yue, 10/12, "Integrated Silicon Waveguides and Specialty Optical Fibers for Optical Communications System Applications"
39. Salman Khaleghi, 6/13, "High-Speed and Reconfigurable All-Optical Signal Processing for Phase and Amplitude Modulated Signals"
40. Reza Chitgarha, 6/14, "Reconfigurable High-Speed Optical Signal Processing and High-Capacity Optical Transmitter"
41. Hao Huang, 11/14, "Multiplexing Techniques and Reconfigurable Networking Functions for Optical Communications using OAM Beams"
42. Asher Voskoboinik, 12/14, "Sweep-Free Brillouin Optical Time-Domain Analyzer"
43. Nisar Ahmed, 1/16, "Orbital Angular Momentum based Spatially Multiplexed Optical and Millimeter-wave Communications"
44. Yan Yan, 4/16, "High Capacity Optical and RF/mm-wave Communications Utilizing Orbital Angular Momentum Multiplexing"
45. Yongxiong Ren, 11/16, "Orbital Angular Momentum-Based Space Division Multiplexing for High-Capacity Optical and Millimeter-Wave Communications"
46. Morteza Ziyadi, 01/17, "Reconfigurable High-Speed Optical Signal Processing Using Optical Frequency Comb for High-Capacity, Spectrally Efficient Fiber Optic Systems and Networks"
47. Guodong Xie, 12/17, "Using Waves Carrying Orbital Angular Momentum for Communications and Remote Sensing"
48. Changjing Bao, 12/17, "On-Chip Kerr Frequency Comb Generation and Its Effects on the Application of Optical Communications"
49. Ahmed Almaiman, 4/18, "Optical Wave Mixing for Tunable Delays and High-Speed Signal Processing"
50. Amirhossein Mohajerin Ariaei, 5/18, "Reconfigurable High-Speed Processing and Noise Mitigation of Optical Data"
51. Long Li, 02/19, "Applications of Orbital Angular Momentum in High-Capacity Free-Space Optical Communications"
52. Yinwen Cao, 04/19, “Reconfigurable Optical Signal Processing for Efficient Spectrum Utilization in High-speed Optical Communication Systems”
53. Peicheng Liao, 11/19, “Microresonator-based Kerr Frequency Comb for Optical Communications and Signal Processing”

54. Zhe Zhao, 07/20, "Optical and mm-wave Orbital-angular-momentum Beam Generation and its Applications in Communications"
55. Cong Liu, 03/21, "Applications in Optical Communications: Quantum Communication Systems and Optical Nonlinear Devices"

Ph.D. THESES ADVISED AND GRANTED: (CONTINUED)

56. Ahmad Fallahpour, 03/21, "Reconfigurable High-Speed Optical Signal Processing for Optical Communication and Modulation Format Manipulation"
57. Fatemeh Alishahi, 09/21, "Reconfigurable and Flexible High-Speed Optical Signal Processing and Spectrally Shared Optical Subsystems"
58. Kai Pang, 03/22, "Spatial Modes for Optical Communications and Spatiotemporal Beams"
59. Runzhou Zhang, 04/22, "High-Capacity Optical Communications Using Structured Light in Random and Disturbed Media"
60. Haoqian Song, 04/22, "Using Spatial Modes for Data Transmission Through the Air and Through the Air-Water Interface"
61. Hao Song, 02/23 "Optical Communications, Optical Ranging, and Optical Signal Processing using Tunable and Reconfigurable Technologies"
62. Kaiheng Zhou, 04/23, "Optical Communication Systems and Space-Time Wave Packet Generation using Frequency Combs and Spatial Modes"
63. Huibin Zhou, 02/24, "Free-Space Optical Communications and Probing through Turbulence Links Using Structured Light"
64. Amir Minoofar, 03/25, "High-Capacity Sub-THz Wireless Communications Using LG Modes and Optical Signal Processing Using Wave Mixing"
65. Xinzhou Su, 05/25, "Manipulation of Light Degrees of Freedom for Applications in Communications and Spatiotemporal Phenomena"

GRANTS:

National Science Foundation (NSF) Young Investigator Award (9/92-8/94), **PI,**
"Optical Fiber Communication Systems"

Advanced Research Projects Agency (ARPA) (8/93-7/96)**, Co-PI,** "Two-Dimensional WDM Interconnects for Highly Parallel and Dense High-Speed Optical Processing", with C.J. Chang-Hasnain (Stanford Univ.)

Charles Lee Powell Foundation USC New Investigator Award (1/92-6/94), **PI**,
"WDM Amplified Optical Networks"

ILX Lightwave Corp. (10/92)**, University Donations Program Award, PI,**
"WDM Systems Research using Wavelength-Tunable Lasers"

National Science Foundation (NSF) (9/93-8/96)**, Co-PI,** "Wavelength Converting and Wavelength Routing for High-Efficiency Almost-All-Optical Networks," with V.O.K. Li and P.D. Dapkus (USC)

(Proposal ranked #1 out of 70 letters-of-intent and 33 final proposals)

David and Lucile Packard Foundation (10/93-9/99), **PI**, "Fellowship in Science and Engineering: WDM Optical Communications"

Advanced Research Projects Agency (ARPA) (8/94-7/96)**, Co-PI,** "Optically-Amplified Scalable WDM Networks using Acousto-Optic Filters for Amplifier Gain Equalization and Signal Routing," with D.A. Smith (Case Western Reserve) and Kathryn D. Li (New Focus)

National Science Foundation, Presidential Faculty Fellows Award (9/94-8/97), **PI**,
"High-Capacity WDM Optical Communication Systems"

ILX Lightwave Corp. (4/95)**, University Donations Award, PI,** "WDM Systems using Multi-λ VCSELs"

Ballistic Missile Defense Org., Focused Research Initiative (5/95-5/98),
"Multiscale Photonic Data Fusion Networks and Their Interfaces," **Senior Investigator** (PI - A.A. Sawchuk)

Optoelectronics Industry Development Assoc. / Joint Optoelectronics Project (**OIDA/JOP**) (2/96), **PI**,
"Ultra-High-Capacity WDM Switching Systems"

Defense Univ. Research Instrumentation Program (**DURIP / ARPA**) (5/96)**, Co-PI,** "Transparent High-Speed Optically-Amplified Multiple-Wavelengths Networks using AOTFs for Add/Drop Multiplexing and Gain Equalization", with D.A. Smith (Case Western Reserve Univ.)

National Science Foundation (NSF) 7/96-6/06, "Multiwavelength Switching in High-Capacity Media Systems," Engineering Research Center in Integrated Media Systems, **Key Investigator** (PI - C.L. Nikias)

Defense Advanced Research Projects Agency (DARPA) (9/96-8/99), **Co-PI,** "Novel WDM Device and System Research for Ultra High Capacity Optical Interconnects", with C.J. Chang-Hasnain (UC Berkeley)

National Science Foundation (NSF) 8/96-7/97, **Co-PI**, Instrumentation Grant, "Wired and Wireless High-Speed Networks," with R.A. Scholtz and J. Choma (USC)

National Science Foundation (NSF) 7/96-6/97, **Co-PI**, with L.A. McAdams (Optivision, Inc.), Small Business Technology Transfer (STTR) Program, "Novel Wavelength Shifting Structures for Optical Networks,"

GRANTS: (CONTINUED)

Joint Services Electronics Program (JSEP) (4/97-3/00), **Senior Investigator** (PI - W. Steier, USC), "Ultra-High-Speed Wavelength and Time Switching for Bursty Communications"

Defense Advanced Research Projects Agency (DARPA) (9/97-8/00), **Senior Investigator** (PI - S.R.J. Brueck, Univ. of New Mexico),"Optoelectronic Materials Center for Manufacturable, Multi-dimentional High Capacity Optoelectronic Interconnects"

Defense Univ. Research Initiative Program (**DURIP/ DARPA**) (5/98-4/99), **Co-PI, "**2D VCSEL Arrays for Optical Imaging, Interconnects, and Signal Processing," with C. Chang-Hasnain (UC Berkeley)

Defense Advanced Research Projects Agency (DARPA) (6/98-5/01), **PI,** "Using a Recirculating Fiber Loop to Determine the Limitations Placed on Ultra-High-Performance Soliton and Linear Optical Systems by Polarization Mode Dispersion," Next Generation Internet

National Science Foundation (NSF) (9/98-8/01), **Co-PI**, "Rapidly-Tunable Integrated Vertical Cavity Filters and Attenuators For Dynamically Reconfigurable Packet-Switched WDM Optical Networks," with C. Chang-Hasnain (UC Berkeley)

Optoelectronics Industry Development Assoc. / Joint Optoelectronics Project (**OIDA/JOP**) (2/98), **PI**, "Ultra-High-Capacity WDM Networks"

Charles Lee Powell Foundation (7/98-6/01), **PI**,"Photonics Backbone for Wireless Communications"

ILX Lightwave Corp. (6/00), **University Donations Program Award, PI,** "WDM Systems Research for the Next Generation Internet"

Defense Advanced Research Projects Agency (DARPA) (7/00-6/04), **Senior Investigator** (PI - S.R.J. Brueck, Univ. of New Mexico),"Optoelectronic Materials Center for High Capacity Optoelectronic Interconnects"

Department of Defense (6/99-5/01), **PI,** "Compensation of Channel-Degrading Effects in Reconfigurable WDM Systems"

Hitachi Corporation (10/99-6/01), **PI,** "Compensation of Polarization Mode Dispersion"

Phaethon Communications (10/00-11/02), **PI,** "Studies of Optical-Fiber-Induced Dispersion Effects"

Defense Advanced Research Projects Agency (DARPA) (6/00-5/03)**, PI,** "Tunable Compensation of Chromatic- and Polarization-Dispersion Effects for Enabling Significantly Higher Performance in the BOSSNET and NTON SUPERNET Testbeds," Next Generation Internet Program

The Okawa Foundation (10/00-9/01), **PI**, "Ultra-High-Capacity Multi-Wavelength Optical Systems"

Intel Corporation (12/01-11/02), **PI**, "New Technologies for Internet Routing in All-Optical Networks "

National Science Foundation (NSF) (10/00-9/03), **PI**, "Novel Dispersion-Division-Multiplexing Technique for Enabling Double the Spectral Efficiency in Transmission & Routing of Photonic & Microwave Networks"

National Science Foundation (NSF) (10/00-9/03), **Co-PI**, "Vertically-Integrated Primitives for a Bufferless All-Optical Packet-Switched Network," with C. Chang-Hasnain and V. Anantharam (UC Berkeley)

GRANTS: (CONTINUED)

Defense Advanced Research Projects Agency (DARPA) (6/00-5/03)**, Co-PI,** "Programmable Miniaturized Devices for CDMA WDM Systems," Chip-Scale WDM Program (PI - D.A.B. Miller, Stanford University)

Defense Advanced Research Projects Agency (DARPA) (6/00-5/03)**, Co-PI,** "Microresonator and Photonic Crystal Filters, Lasers and Modulators for Analog and Digital Chip Scale WDM Systems," Chip-Scale WDM Program, (PI - P.D. Dapkus and J. O'Brien, USC)

JDS Uniphase Corporation (3/02), **PI**, "Equipment Donation for the Optical Communications Lab at USC"

Cisco Systems (9/03-8/04), **PI**, "Mitigation of Fiber Nonlinear Effects in PMD-Limited WDM Systems"

Virtual Photonics Inc. (5/03), **PI**, "Software Donation for the Optical Communications Lab at USC"

Defense Advanced Research Projects Agency (DARPA) (12/02-11/06)**, PI,** "Secure Communications Over LANs using O-CDMA," OCDMA Program

Intel Corporation (1/03-12/04), **PI**, "Optical Buffers for Enhancing Optical Burst Switching"

Cisco Systems (9/04-8/05), **PI**, "Analysis of the Transmission Limitations of Directly Modulated Digital Signals in Metropolitan Optical Communication Systems"

Missile Defense Agency (10/03-9/04), **Co-PI**, "Measurements of Thin-Film Waveguides" (PI – Boyd Hunter, TPL, Inc.)

National Science Foundation (NSF) (9/03-8/06), **PI**, "High-Capacity Optical Communication Networks: Device and Systems Research using Photonic Crystal Structures that Enable Highly-Advanced Classical and Quantum Optical Networking," with A. Scherer (Caltech)

Defense Advanced Research Projects Agency (DARPA) (7/04-6/08), **Senior Investigator** (PI - S.R.J. Brueck, Univ. of New Mexico),"Optoelectronic Materials Center for Spatial, Temporal and Spectral Localization for Advanced Photonic Capabilities," University Photonics Research Program

Defense Advanced Research Projects Agency (DARPA) (4/04-10/05)**, PI,** "DOD-N Network Performance Based on Specific Physical DOD-N Technology Parameters: Connecting Multiple Core Routers,"DOD-N Program

Defense Advanced Research Projects Agency (DARPA) (7/04-9/08), **Co-PI** (PI – R.W. Boyd, Univ. of Rochester),"Applications of Slow Light in Optical Fibers," Slow Light Program

Intel Corporation (5/05-12/05), **PI**, "Measurements of Silicon-Based Photonic Filters"

Cisco Systems (9/05-8/06), **PI**, "Systems Measurements and Demonstrations of Cost-Effective Reach Extension and Monitoring using Intel-Fabricated Silicon-Based Waveguide Grating Filters"

National Science Foundation (NSF) (9/05-8/09), **Senior Investigator**, "NIRT: Integrated Nanophotonics for Quantum Computation and Quantum Information Processing" (PI – J.D. O'Brien, USC)

Hewlett Packard Corporation (10/05-1/06), **PI**, "Optical Interconnections"

Intel Corporation (1/06-12/06), **PI**, "Link Studies of Silicon Photonic Devices"

GRANTS: (CONTINUED)

National Science Foundation (NSF) (9/06-8/09), **Co-PI**, "A Hybrid Integrated Bidirectional Transparent RF-Optical Interface for Heterogeneous Data Traffic" (PI – H. Hashemi, USC)

Defense Advanced Research Projects Agency (DARPA) (10/06-7/07), **Co-PI** (PI – R. Beausoleil, Hewlett Packard),"Applications of Nanophotonics to Information Technology," Intra-Chip Communications Program (ARL)

Defense Advanced Research Projects Agency (DARPA) (7/07-6/08), **PI**,"Cisco: Variable-Bit-Rate and Multiple-Modulation Format DQPSK/ASK Receivers," Industrial Matching Program for theUniversity Photonics Research Program

Cisco Systems (7/07-6/08), **PI**, "Techniques for Enhancing WDM Transmission Performance when using Advanced Modulation Formats at 40 Gb/s and Beyond"

Defense Advanced Research Projects Agency (DARPA) (7/07-6/08), **PI**,"Intel: Phase and Amplitude Response of Silicon Modulators for Optical Systems," Industrial Matching Program for theUniversity Photonics Research Program

Intel Corporation, (7/07-6/08), **PI**, "Phase and Amplitude Response of Silicon Modulators for Optical Systems"

Optoelectronics Industry Development Association (OIDA), (11/07-3/08), **PI**, "High-Speed Optical Modulators," Photonics Technology Access Program **(PTAP)**

National Institute of Standards and Technology (NIST), (10/07-9/08), **PI**, " Optical Performance Monitoring to Enable Robust and Reconfigurable Optical Networks," Research Grants Program

Defense Advanced Research Projects Agency (DARPA) (1/08-12/10), **Co-PI** (PI – Ann C. Von Lehman, Telcordia),"Dynamic Resilient Terabit IP/Optical Networks," CORONET Program

Defense Advanced Research Projects Agency (DARPA) (1/08-6/12)**, PI,** "Enhanced Performance & Functionality of Continuously-Tunable Optical Delays," POPS Program

Hewlett Packard Corporation (5/08-9/08), **PI**, "Micro-ring Resonators for Optical Interconnections"

Defense Security Cooperation Agency (DSCA) (8/09-7/11), **PI**, "Enabling Higher-Performance Nonlinearity-Based Optical Sensors: Advances in Sensitivity and Dynamic Behavior "

Defense Univ. Research Instrumentation Program / Air Force Office of Scientific Research (**DURIP/AFOSR**) (6/08-5/09)**, PI, "**A 100-Gbit/s Base Multiplexer for Generation and Transmission of 400-Gbit/s Optical Polarization-Multiplexed Differential Quadrature Phase-Shift-Keying Signals**"**

Defense Advanced Research Projects Agency (DARPA) (6/08-5/09)**, PI,** "Exploring Signal Distortion in an Ultra-Low-Loss Waveguide," iPhOD Program

Defense Advanced Research Projects Agency (DARPA) (9/08-8/09), **Co-PI** (PI – A.L. Gaeta, Cornell Univ.),"Large Tunable Delays in Fiber and On-Chip via Conversion/Dispersion," Slow Light Program

Hewlett Packard Corporation (8/08-7/09), **PI**, "Signal Processing in On-Chip Optical DWDM Networks,"HP Labs Innovation Research Program (IRP)

GRANTS: (CONTINUED)

Defense Advanced Research Projects Agency (DARPA) (11/08-10/09)**, Co-PI** (PI – Ann C. Von Lehman, Telcordia),"Data in the Optical Domain Networks (DOD-N) Enabling Technology Transition," DOD-N Program

National Science Foundation (NSF) 9/08-8/13, "Center for Integrated Access Networks (CIAN)," Engineering Research Center, **Thrust Leader** (PI - Nasser Peyghambarian, Univ. of Arizona)

Hewlett Packard Corporation (8/09-7/10), **PI**, "Signal Processing in On-Chip Optical DWDM Networks II,"HP Labs Innovation Research Program (IRP)

Defense Advanced Research Projects Agency (DARPA) (11/09-5/14)**, Co-PI,** "Ultra-low Loss, Chip-Based Hollow-Core Waveguide usingHigh-Contrast Grating," integrated Photonic Delay (iPhoD)Program (PI: C.J. Chang Hasnain, UC Berkeley)

Gigoptix Corp. (11/09-10/10), **PI**, "High-Speed Modulation in Optical Communication Systems"

Hewlett Packard Corporation (8/10-7/11), **PI**, "Signal Processing in On-Chip Optical DWDM Networks III,"HP Labs Innovation Research Program (IRP)

Defense Advanced Research Projects Agency (DARPA) (6/10-4/11)**, PI,** "Optical Tapped-Delay-Line High-Speed Signal Processing," MTO Study

Cisco Systems (10/09-9/10), **PI**, "Novel Techniques to Enhance the Capacity Planning and Resource Management Efficiency of High-Capacity Optical Networks," Univ. Research Program

Defense Advanced Research Projects Agency (DARPA) (9/10-8/13)**, Co-PI,** "The Ultimate Capacity-Achieving Receiver for Classical Optical Communications," Information on a Photon (InPho)Program (PI: S. Dolinar, JPL)

National Science Foundation (NSF) (11/11-10/16), **Co-PI**, Major Instrumentation Grant (MRI), "Development of Measurement and Testing Equipment for Distributed Wireless Communications," with A. Molisch (PI, USC).

Defense Univ. Research Initiative Program (**DURIP/ONR**) (12/11-11/12)**, Co-PI, "**Ultra-wideband MIMO Channel Sounder for Distributed Electronic Warfare Applications and Localization Systems**,"** with A. Molisch (PI, USC)

Cisco Systems (10/11-9/12), **PI**, "Flexible, Reconfigurable Capacity Output of High-Performance Optical Transceivers Enabling Cost-Efficient, Scalable Network Architectures," Univ. Research Program

Defense Security Cooperation Agency (DSCA) (2/1/2012-1/31/2013), **PI**, "Performance Enhancement of Optical Fiber Sensors Based on Nonlinearities and Multi-Dimensional Parameterization"

Gigoptix Corp. (11/10-10/11), **PI**, "100-Gbaud Modulation in Optical Communication Systems"

Defense Advanced Research Projects Agency (DARPA) (2/11-2/12)**, PI,** "High-Speed Optical Processing of Sparse Aperture Image Data (50 Megapixels, 10-bit Depth) using Tunable Optical Tapped-Delay-Lines," MTO/STO Study

Google Faculty Research Awards Program (11/11-10/12), **PI**, "Cost-Effective, Ubiquitous Optical SNR Performance Monitoring to Enhance Stability and Reconfigurability in Advanced, High-Capacity Google Networks"

GRANTS: (CONTINUED)

Defense Advanced Research Projects Agency (DARPA) (6/12-1/14)**, PI,** "Reconfigurable Networking Functions (Add/Drop, Data Exchange, Multicasting) in OAM-Based Systems," DSO Study

National Science Foundation (NSF) (3/2012-3/2015), **PI**, "Terabit-per-second Data Processing to Extract Features of Interest in Enormous Amount of Data"

Air Force Office of Scientific Research (AFOSR) (7/12-7/15), **PI**, "Tailoring of Dispersion and Nonlinearity of Slotted Waveguides and Ring Resonators to Achieve Stable, Efficient, Octave-Spanning Optical Frequency Combs," Basic Research Initiative (BRI) Program

Intel Labs University Research Office (URO) (12/12-12/15), **Co-PI**, "Higher, Denser, Wilder: Massively Broadband and Adaptive Wireless for 5th Generation Wireless Communications" (PI: A. Molisch, USC)

Google Faculty Research Awards Program (1/13-12/13), **PI**, "Reconfigurable, Ubiquitous Optical Signal-to-Noise-Ratio Monitoring to Enhance Stability and Upgradability in Google's Present and Future High-Capacity Networks"

National Science Foundation (NSF) (9/13-8/15), "Center for Integrated Access Networks (CIAN)," Engineering Research Center, **Thrust Leader** (PI - Nasser Peyghambarian, Univ. of Arizona)

National Science Foundation (NSF) (10/13-9/16), **Co-PI**, INSPIRE Program, "An Optical Turing Machine for Native Computing using High-Capacity Transmission Modulation Format Symbols" (PI: Joe Touch, USC ISI)

Nxgen Partners (5/14-8/15), **PI**, "Application of Orbital Angular Momentum to Communications"

Bandwidth10 (5/14-7/15), **PI**, USC-1347563, NSF, Option 1: Small-Business ERC Collaborative

Air Force Office of Scientific Research (AFOSR) (12/14-6/15), **Co-PI**, "Terabit Optical COMMunications System (TOCOMM)," STTR Program

Air Force Office of Scientific Research (AFOSR) (6/15-6/19), **PI**, "Fundamental Understanding of the Physics of Kerr Frequency Comb and Its Effects on the Applications of Coherent Communication, Signal Processing and Measurement"

Defense Security Cooperation Agency (DSCA) (11/15-1/16), **PI**, "Tunable Discrete Random Access Optical Buffer"

Defense Security Cooperation Agency (DSCA) (11/15-11/16), **PI**, "Generic Fabrication Methodology for VIS-IR Integrated Electrooptical Circuits"

Fujitsu (4/15-4/16), **PI**, "Optical Signal Processing Functions in an Optical Network"

National Institute of Standards and Technology (NIST) (2/16-1/17), **PI**, "Measurement, Technology, and Analysis of Overlapped Channels for the Optimal Use of Spectrum in Communication Systems"

NxGen Partners (12/15-8/16), **PI**, "Using OAM Beams for High-capacity RF E-band & Optical Fiber km Links"

Air Force Office of Scientific Research (AFOSR) (3/16-2/18), **Co-PI**, "Phase II, The Terabit Optical COMMunications (TOCOMM) System" (PI: Robert Bock, R-Dex)

GRANTS: (CONTINUED)

National Science Foundation (NSF) (6/15-5/18), **Co-PI**, "Fundamentals of Wireless Communication Systems using Orbital Angular Momenta" (PI: Andreas F. Molisch)

Office of Naval Research (ONR) (7/15-7/18), **Co-PI**, "High-Capacity, Free-Space Quantum Key Distribution based on Spatial and Polarization Encoding" (PI: Robert Boyd, Uuniversity of Rochester)

Office of Naval Research (ONR) (10/15-6/16)**, Co-PI,** "STTR: Precision Optical Navigation Guidance (PRONG) System" (PI: D. Starodubov, FOMS, Inc.)

Huawei / Futurewei (2/16-2/18), **PI,** "Optical Signal Processing for All-Optical Networks"

Intel Labs (2/16-2/19), **PI,** "OAM-Based Wireless Systems"

Defense University Research Instrumentation Program (DURIP) (07/16-06/17), **PI**, "High Baud-Rate and High-Order QAM Optical Transmitter for Long-Range Terabit-per-Second Free-Space Optical Communications Using Orbital Angular Momentum"

National Science Foundation (NSF) (07/16-03/17), **Co-PI**, "STTR Phase I: TeraLink - Next Generation Free Space Optical Communications System"

Huawei / Futurewei (7/16-7/17), **PI,** "Perspectives on the Future of Optical Communications"

Vannevar Bush Faculty Fellowship (VBFF) (08/16-07/21), **PI**, "Multiple Structured Electromagnetic Waves Containing Orbital Angular Momentum for Novel Communications, Imaging, and Directed Energy"

Fujitsu (4/17-9/18), **PI**, "Insights for Future Optical Communication Systems"

Lyteloop Technologies, (11/17), "Equipment donation (spatial light modulator)"

Air Force Office of Scientific Research (AFOSR) SBIR (01/18-03/19)**, Co-PI,** "The Tunable and Reconfigurable Integrated Platform (TRIP) for OAM Generation, Multiplexing, Demultiplexing and Detection" (PI: Robert Bock, R-Dex)

Fujitsu (04/18-04/19), **PI**, "Optical Signal Processing"

Naval Air Systems Command (NAVAIR) SBIR (06/18-12/18)**, Co-PI,** "Enhanced Robustness and Reliability for Free-Space Optical Communication Link Using Spatial Diversity (SD-Link)" (PI: Robert Bock, R-Dex)

Defense Advanced Research Projects Agency (DARPA) (7/18-6/22)**, Co-PI,** " Giant Nonlinear Response of ENZ Metastructures" (PI: Robert Boyd, Uuniversity of Rochester)

Air Force Office of Scientific Research (AFOSR) SBIR (12/19-12/21), **Co-PI,** "Phase II: The Tunable and Reconfigurable Integrated Platform (TRIP) for OAM Generation, Multiplexing, Demultiplexing and Detection" (PI: Robert Bock, R-Dex)

Defense University Research Instrumentation Program (DURIP) (04/20-04/21), **PI**, "Signal Source Analyzer for Frequency Comb, Orbital Angular Momentum Applications, and Highly Nonlinear Materials"

GRANTS: (CONTINUED)

Naval Information Warfare Center (NIWC) (07/20-01/21), **PI**, "Physics Based Propagation Modeling for OAM Multiplexed Optical Communication Links"

Office of Naval Research under a Multidisciplinary University Research Initiative (MURI) (06/20-06/25), **Co-PI**, "High Photon Density Spatiotemporal (OAM+SAM) Vector Beams for Maritime Environments" (PI: E. Johnson, Clemson University)

Office of Naval Research under a Multidisciplinary University Research Initiative (MURI) (07/20-07/25), **Co-PI**, "Classical Entanglement in Structured Optical Fields" (PI: A. Abouraddy, Univ. of Central Florida)

Defense Security Cooperation Agency (DSCA) (07/2020-07/21), **PI**, "High-Capacity Data Transmission Link Between a Ground Terminal and a Flying Drone using Multiplexing of Multiple Optical Orbital-Angular-Momentum Beams"

Defense Security Cooperation Agency (DSCA) (06/2020-06/21), **PI**, "Enhancing the Utilization of Structed Beams for Localization and Hiding by Diversity and Compensating Turbulence Effects"

Nippon Telephone and Telegraph (NTT) (07/20-07/21), **PI**, "Experimental Implementation of a High-Capacity Wireless Link by Exploiting Orbital Angular Momentum Modes Multiplexing in the Sub-THz Regime"

Defense Advanced Research Projects Agency (DARPA) (07/20-07/21), **Co-PI**, "Scalable All-Optical Processing – Remotely (SCALOP-R)" (PI: J. Habif, USC ISI)

Airbus Institute for Engineering Research (AIER) Board (09/20-09/22), **PI**, "Towards Terabit/sec High-Capacity Free-Space Optical Communication Links to Airplanes using Multiplexing of Orthogonal Beams"

Qualcomm Innovation Fellowship (9/20-10/21), **Supervisor**, "High-Capacity Mode-Division-Multiplexed Wireless Communications Within and Beyond Millimeter-Wave Band"

Air Force Research Laboratory (AFRL) though University of New Mexico COSMIAC (9/2021-9/2023), **PI**, Subaward on Program "Communications and Position Navigation and Timing (PNT) (COMPNT)"

Airbus Institute for Engineering Research (AIER) Board (09/22-09/25), **PI**, "Utilizing Structured Light to Enable Both 3D Probing of Turbulence and Resilient High-Capacity Communications Through Turbulence"

Office of Naval Research (ONR) STTR (06/22-12/22), **Co-PI,** "Phase I: Structured-Light-Based High-Resolution and High-Dynamic-Range Optical Underwater Ranging" (PI: Robert Bock, R-Dex)

Defense Advanced Research Projects Agency (DARPA) (9/22-10/24), **Co-PI,** "Phase I: Space-Based Adaptive Communications Node" (PI: Keren Bergman, Columbia University)

Defense Advanced Research Projects Agency (DARPA) (4/22-4/24), **Co-PI,** "DIAMOND: Distributed Training of Massive Models at Bandwidth Frontiers" (PI: Jonathan Habif, USC ISI)

Office of Naval Research (ONR) STTR (5/23-10/23), **Co-PI,** "Phase I Option: Structured-Light-Based High-Resolution and High-Dynamic-Range Optical Underwater Ranging" (PI: Robert Bock, R-Dex)

Office of Naval Research (ONR) STTR (10/23-09/25), **Co-PI,** "Phase II: Structured-Light-Based High-Resolution and High-Dynamic-Range Optical Underwater Ranging" (PI: Robert Bock, R-Dex)

GRANTS: (CONTINUED)

National Science Foundation (NSF) (10/23-9/26), **Co-PI**, "Impact of Radiation Trapping on Sensing and Communication Systems in the THz, Infrared, and Optical Regime - Foundations, Challenges, and Opportunities" (PI: Andreas F. Molisch, USC)

Office of Naval Research (ONR) STTR (10/24-8/25), **Co-PI,** "Phase I: Direct Cross-Domain Optical Data Transfer" (PI: Austin Jantzi, Physical Sciences, Inc.)

Defense Advanced Research Projects Agency (DARPA) (10/24-9/25), **Co-PI,** "Phase II: Space-Based Adaptive Communications Node" (PI: Keren Bergman, Columbia University)

Defense Advanced Research Projects Agency (DARPA) (3/25-9/26), **Co-PI,** "EMON Program: Next-Generation Radar with Enhanced Information Extraction and Resolution Utilizing Advanced Spatially Structured Electromagnetic Waves" (PI: Andreas Molisch, USC)

USC ACTIVITIES:

Co-Chair, Provost's University Committee on Appointments, Promotions, and Tenure (UCAPT) ('24-'26)

Member, Panel to interview Candidates, Director of Faculty Administration, Provost's Office ('25)

Chair, Natural Sciences and Engineering Panel, Provost's University Committee on Appointments, Promotions, and Tenure (UCAPT) ('23-'25)

Member, ECE Department Merit Review Committee, Research Subcommittee ('24)

Member, Proposal Review Committee, Energy Frontier Research Center Program, USC Office of VP Research ('22)

Member, USC University Research Network ('22-'24)

Chair, Teaching & Service Subcommittee, Merit Review Committee, Dept. of ECE-Systems ('22)

Member, Natural Sciences/Engineering Panel, University Committee on Appointments, Promotions, and Tenure (UCAPT) ('21-'23)

Member, Review Committee, Vice President of Research, USC Nominations for Packard Fellowships in Science & Engineering ('21-'24)

Member, Provost's USC Decanal Review Advisory Committee of Dean Yortsos ('21)

Member, ECE Merit Review Committee (Teaching) ('21)

Member (VSoE Committee) and Chair (ECE-S, Subcommittee), Covid-19 Research Restart Task Force, VSoE ('20)

Member, USC VSoE Space Council ('19-'20)

Member, Award Committee, Associates Award for Creativity in Research (several years within '13-'19)

Director, Communications Sciences Institute, Ming Hsieh Dept. of Electrical Eng. ('16-'17)

Faculty Advisor, IEEE, USC Student Chapter ('15-'18)

Faculty Advisor, OSA Student Chapter at USC ('14-'18)

Member, Graduate Curriculum Committee, Ming Hsieh Dept. of Electrical Engineering – Systems ('16-'17)

Chair, Provost's University-Wide Committee on Academic Review (UCAR) (2013-2015)

Co-Chair, Provost's University-Wide Committee on Academic Review (UCAR) (2012-2013)

Chair, Provost's University-Wide Ph.D. Fellowship Evaluation Task Force (2011-2012)

Chair, Provost's University-Wide Graduate School Committee, Fellowships, Prizes & Awards ('09-'11)

President, USC Chapter of Phi Kappa Phi All-University Honor Society ('11-'12)

Vice President, USC Chapter of Phi Kappa Phi All-University Honor Society ('10-'11)

Executive Board Member, USC Chapter of Phi Kappa Phi All-University Honor Society ('09-'12)

Member, Provost's Advisory Committee on Transformational Hiring in Sciences & Eng. ('11-'12)

Member, Vice-Provost's The Graduate School Faculty Advisory Council (2011-2012)

Faculty Advisory Committee, USC Viterbi School of Eng., New Frontiers of Science & Eng. Bldg. ('10)

Provost's Conflict of Interest in Research Committee ('07-'08, '08-'09, '09-'10)

Provost's Conflict of Interest in Research Task Force ('10-'11)

Member, Award Committee, Associates Award for Excellence in Teaching (several years within '04-'09)

Provost's Faculty Working Group for "Defining the New Diploma in Ph.D. Innovation" ('08-'09)

Provost's Graduate School Committee on Fellowships, Prizes, and Awards ('07-'08, '08-'09)

Member, Dean's Committee of the Unification of the Ming Hsieh EE Dept., USC Viterbi School of Eng. ('10)
Executive Committee, Ming Hsieh Dept. of Electrical Engineering - Systems ('07-'11 and '16-'17)
Co-Director, Communications Sciences Institute, Ming Hsieh Dept. of Electrical Eng. ('07-'11)
Academic Program Review Subcommittee, Ming Hsieh Dept. of EE Advisory Board Committee ('10)
Student Affairs Committee of the USC Board of Trustees, Faculty Member ('06-'07)
Organizer, Students' Practical Guide Seminar Series, Ming Hsieh Dept. of Electrical Eng. ('07-'09)
Co-Chair, Departmental Retreat Committee, Ming Hsieh Dept. of Electrical Eng. ('07)

USC ACTIVITIES: (CONTINUED)

Member, Awards Committee, Ming Hsieh Dept. of Electrical Eng. ('07-'08, '08-'09, '11-'12)
Member, Research Committee of the Engineering Faculty Council, USC Viterbi School of Eng. ('07)
USC Center for Excellence in Teaching (CET), Teaching Assistant Training Program ('06)
University-Wide Committee on Appointments, Promotions, & Tenure (UCAPT) ('03-'04,'04-'05,'08-'10)
Provost's University Financial Disclosures Review Committee ('03-'04, '04-'05, '05-'06, '06-'07)
Committee, University-Wide Associates Awards, Excellence in Teaching & Outstanding TA ('03-'05,'07-'10)
Faculty Advisor, Alpha Delta Sigma, USC Jewish Honor Campus Fraternity
Nominated and Accepted, Provost's Leadership Council ('97-'98)
USC Department of Electrical Engineering – Systems, Chair Search Committee ('02-'03)
Chair, Best Student Research Paper Award Committee, Dept. of Electrical Engineering ('02)
Director's Search Committee, USC's NSF Engineering Research Center in Multimedia ('01-'02)
USC School of Engineering Dean's Search Committee ('00-'01)
USC School of Engineering Research Committee ('99-'00)
Elected, USC Engineering Appointments, Promotions, & Tenure Committee ('94-'98)
Associate Director, USC Integrated Media Systems Center, Student Affairs ('96-'01)
University Committee on Patents and Technology ('94-'97)
Associate Director, USC Center for Photonic Technology ('94-present)
USC School of Engineering Restructuring Subcommittee ('96)
USC School of Engineering Systems Architecting Committee ('97)
USC School of Eng. Recruitment Enrollment Management Committee ('94-'96)
Faculty Advisor, Optical Society of America, USC Student Chapter ('95-present)
Board of Directors, LA Hillel City Board, USC Representative ('95-'97)
Faculty Advisory Board, USC Hillel Organization ('92-'99)
Seminar Series Coordinator (Communications Sciences Institute) ('92-'95)
Ph.D. Screening Exam Coordinator (Communications Sciences Institute) ('92-'97)

PUBLICATIONS

U.S. PATENTS: (*non-U.S. patents not listed here*)

1. Title: A Method of Localized Photochemical Etching of Multilayered Semiconductor Body (U.S. Pat. Ser. No. 5,081,002), Co-Inventors w/ A.E. Willner: M. N. Ruberto, D. V. Podlesnik, and R. M. Osgood, Jr. (Jan. 14, 1992)

2. Title: One-To-Many Simultaneous Optical Two-Dimensional Plane Interconnections using Multiple Wavelength, Vertical Cavity, Surface-Emitting Lasers and Wavelength-Dependent Detector Arrays (U.S. Pat. Ser. No. 5,546,209), Co-Inventors w/ A.E. Willner: C.J. Chang-Hasnain and J.E. Leight. (Aug. 13, 1996)

3. Title: Tunable Dispersion Compensator Based on a Nonlinearly-Chirped Fiber Bragg Grating (U.S. Pat. Ser. No. 5,982,963), Co-Inventors w/ A.E. Willner: J.-X. Cai, J. Feinberg, K.-M. Feng, V. Grubsky, and D.S. Starodubov. (Nov. 9, 1999)

4. Title: Integrated Bi-directional Gradient Refractive Index Multiplexer (U.S. Pat. Ser. No. 6,011,885), Co-Inventors w/ A.E. Willner: J.R. Dempewolf, R.H. Dueck, B.V. Hunter, and R.K. Wade. (Jan. 4, 2000)

5. Title: Dispersion Compensation by using Tunable Nonlinearly Chirped Gratings (U.S. Pat. Ser. No. 6,330,383), Co-Inventors w/ A.E. Willner: J.-X. Cai, K.-M. Feng, R. Khosravani, S. Lee, and J. Peng. (Dec. 11, 2001)

6. Title: Optical Compensation for Dispersion-Induced Power Fading in Optical Transmission of Double-Sideband Signals (U.S. Pat. Ser. No. 6,388,785), Co-Inventors w/ A.E. Willner: O.H. Adamczyk, S.A. Havstad, A.B. Sahin, and Y. Xie. (May 14, 2002)

7. Title: Tunable Compensation for Polarization-Mode Dispersion using a Birefringent Nonlinearly-Chirped Grating in a Dual-Pass Configuration (U.S. Pat. Ser. No. 6,400,869), Co-Inventors w/ A.E. Willner: S. Lee, Z. Pan, and Y. Xie. (June 4, 2002)

8. Title: Dynamic Power Equalization of Many Wavelength-Division-Multiplexed Channels in a Fiber Optic System using Acousto-Optic Technology (U.S. Pat. Ser. No. 6,341,021), Co-Inventors w/ A.E. Willner: J.-X. Cai, K.-M. Feng, S.H. Huang, D.A. Smith, and X.Y. Zou. (Jan. 22, 2002) [*Note: Name misspelled as "Wilner" in patent.]*

9. Title: Tunable Optical Dispersion-Slope Compensation Based on a Nonlinearly-Chirped Bragg Grating (U.S. Pat. Ser. No. 6,453,093), Co-Inventors w/ A.E. Willner: S. Lee, Z. Pan, and Y. Xie. (Sept. 17, 2002)

10. Title: Tuning of Optical Dispersion by using a Tunable Fiber Bragg Grating (U.S. Pat. Ser. No. 6,453,095), Co-Inventors w/ A.E. Willner: J.-X. Cai, J. Feinberg, K.-M. Feng, V. Grubsky, and D.S. Starodubov. (Sept. 17, 2002)

11. Title: Optical Detection of a Fiber Span with High Polarization-Mode Dispersion in a Fiber System (U.S. Pat. Ser. No. 6,459,479), Co-Inventors w/ A.E. Willner: S. Lee. (Oct. 1, 2002)

12. Title: Technique for Detecting the Status of WDM Optical Signals (U.S. Pat. Ser. No. 6,480,648), Co-Inventors w/ A.E. Willner: J.R. Dempewolf, W.W. Peck, I. Turner, and R.K. Wade. (Nov. 12, 2002)

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INVITED PAPERS AND PRESENTATIONS:

1. Alan E. Willner, "Mode-Multiplexed Free-Space Optical Communications," **Keynote Presentation, Smart Photonic and Optoelectronic Integrated Circuits conference, SPIE Photonics West,** San Francisco, CA, Jan. 2026 (SPIE, Bellingham, Wash., 2026).

2. Alan E. Willner, "Underwater Optical Ranging Techniques," **Invited Presentation, Conference OE305: Optical Sensing and Precision Metrology, SPIE Photonics West (OPTO),** San Francisco, CA, Jan. 2026 (SPIE, Bellingham, Wash., 2026).

3. Alan E. Willner, Huibin Zhou, and Xinzhou Su, "Perspective on Tailoring Longitudinal Structured Beam and Its Applications," **Invited Paper, Nanophotonics**, accepted for publication, 2025.

4. Alan E. Willner, "High-Accuracy Ranging in Turbid Water using Structured Light," **Plenary Talk, 13th International Conference on Intelligent Computing and Wireless Optical Communications (ICWOC 2025),** Chengdu, China, June 2025.

5. Alan E. Willner and Yuxiang Duan, "High-Accuracy Ranging in Turbid Water using Structured Light," **Plenary Lecture, Lasers, Optics, Photonics, Sensors & Ultrafast Nonlinear Optics (LOPS)**, Hollywood Beach, Florida, June 2025.

6. Alan E. Willner, "Photonics Research Webinar with Alan E. Willner," **Invited Webinar, Photonics Research**, Apr 2025.

7. Alan E. Willner, "Career Advice: How to Maximize Your Options," **Invited Presentation, IEEE Student Chapter Talk Series at USC**, Apr 2025.

8. Alan E. Willner, Xinzhou Su, Yue Zuo, Yingning Wang, Zile Jiang, Amir Minoofar, Hongkun Lian, Zixun Zhao, Abdulrahman Alhaddad, and Ruoyu Zeng, "Synthesis of Space-Time Wave Packets Using Correlated Optical Frequency Comb Lines and Spatial Fields," **Invited Paper, Nanophotonics**, vol. **14,** no. 6, 2025, pp. 659-675. 2025.

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CA, March 2025.

11. Alan E. Willner, "Structured-Light-Based High-Resolution and High-Dynamic-Range Optical Underwater Ranging Subsystem," **Invited Seminar, OUSD Basic Research Office Forum,** Feb. 2025.

12. Alan E. Willner, "Lessons Learned In Using Optics for Signal Processing," **Invited Tech Talk, IEEE/Optica Conference on Optical Fiber Communications (OFC),** San Francisco, CA, March 2025.

13. Alan E. Willner, "Underwater Optical Ranging Using Multiple Orbital-Angular-Momentum Modes," **Invited Paper, Conference OE305: Optical Sensing and Precision Metrology, SPIE Photonics West (OPTO),** paper **13380-44**, San Francisco, CA, Jan. 2025 (SPIE, Bellingham, Wash., 2025).

14. Alan E. Willner, "Tunable Superluminal-to-Negative Group Velocities in Free-Space and Fiber Using Frequency Combs, "**Invited Paper**, **Society of Photo-Instrumentation Engineers (SPIE) Photonics West, Optical, Quantum Sensing, Imaging, and Precision Metrology III**, paper **13392-55**, San Francisco, CA, Jan. 2025 (SPIE, Bellingham, Wash., 2025).

15. Alan. E. Willner, "Tailoring the Transverse, Longitudinal, and Temporal Properties of Space-Time Structured Light," **Invited Presentation**, **Optica Incubator Workshop on Spatiotemporal Structuring of Light**, Washington, DC, Nov. 2024 (Optica, D.C., 2024).

16. Alan E. Willner, "Integrated Optics to Metasurfaces—Impact and Legacy of Professor Richard Osgood, Jr.," **Invited Paper, Materials Research Society Fall Meeting,** paper **EL07.08.02,** Boston, MA, Dec. 2024.

17. Alan E. Willner, "Advances in Mode-Multiplexed Free-Space Optical Communications," **Invited Paper, Frontiers in Optics Conference 2024 (FiO)**, paper **FM3C. 1**, Denver, Colorado, Sep. 2024.

18. Alan E. Willner, "Value of Professional Societies to Your Career: Plant a Flag to be a Leader," **Invited Presentation, Frontiers in Optics Conference 2024 (FiO)**, Student Workshop, Denver, Colorado, Sep. 2024.

19. Alan E. Willner, "Optical Communications: Innovations and Applications Abound," **Invited Seminar, Elhanan and Solomon Golomb Memorial Lecture, Jerusalem College of Technology**, June 2024.

20. Alan E. Willner, "Structured Light for Communications and Sensing," **Invited Seminar, Distinguished Seminars, ECE /CQD, Northwestern University**, Nov. 2024.

21. Alan E. Willner, Huibin Zhou, Yuxiang Duan, Zile Jiang, Murale Ramakrishnan, Xinzhou Su, Kaiheng Zou, and Kai Pang, "Advances in Multi-Channel Mid-IR Free-Space Optical Communications," **Invited Paper, IEEE/Optica Journal of Lightwave Technology,** vol. **42**, no. 19, pp. 6739-6748, 2024.

22. Alan E. Willner, "Dynamic Space-Time Wave Packets," **Invited Paper**, **SPIE Active Photonic Platforms (APP) 2024 Conference, of the Nanoscience+Engineering Symposium, part of SPIE Optics and Photonics,** paper **13110-16**, San Diego, CA, August 2024.

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24. Runzhou Zhang, Xinzhou Su, Hao Song, Huibin Zhou, Moshe Tur, and Alan E. Willner, "Automatic Turbulence Resilience in Pilot-Assisted Self-Coherent Free-Space Optical Communications," **Invited Paper, IEEE/Optica Journal of Lightwave Technology,** vol. **42**, no. 10, pp. 3760-3769, 2024.

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27. Alan E. Willner, "Free-Space Mid-IR Communication Systems," **Invited Tech Talk, IEEE/OSA Conference on Optical Fiber Communications (OFC),** San Diego, CA, March 2024.

28. Alan E. Willner, "Optical and THz Broadband Integrated Circuits for Mode-Dependent Free-Space Communications," **Invited Paper, IEEE/OSA Conference on Optical Fiber Communications (OFC**), paper **Tu2A.2**, San Diego, CA, March 2024.

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32. Runzhou Zhang and Alan E. Willner, "Turbulence-Robust Free-Space Optical Transmission Assisted by a Pilot Beam," **Invited Paper, Photonic Networks and Devices,** paper **NeM4B.3**, Busan, Republic of Korea, July 2023.

33. Alan E. Willner, "Introducing and Defending Your Research Paper," **Invited Presentation, Opto-Electronics and Communications Conference (OECC)**, Student Workshop, Shanghai, China, July 2023.

34. Jeremy Upham, Zhimin Shi, Robert W. Boyd, and Alan E. Willner, "Vectorial Phase Conjugation for High-Fidelity Spatial Mode Transmission," **Invited Talk, Photonics North**, Montreal, Quebec, Canada, June 2023.

35. Alan E. Wilner, "Optical Communications: Innovations and Applications "Abound"," **Invited Talk, Benjamin Franklin Medal Symposium Celebrating Prof. Nader Engheta**, Villanova University, Villanova, PA, April 2023.

36. Alan E. Wilner, "Advances in Probing of Turbulent Media using Spatially Structured Light," **Invited Talk**, University of Pennsylvania, Philadelphia, PA, April 2023.

37. Alan E. Willner, "Structured Light for High-Capacity Communications," **Plenary Lecture, Lasers, Optics, Photonics, Sensors & Ultrafast Nonlinear Optics (LOPS)**, Fort Lauderdale, FL, June 2023.

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43. Alan E. Willner, Kaiheng Zou, Kai Pang, Hao Song, Huibin Zhou, Amir Minoofar, and Xinzhou Su, "Free-Space Mid-IR Communications Using Wavelength and Mode Division Multiplexing," **Invited Paper**, **Optics Communications**, volume **541**, article 129518, 2023.

44. Amir Minoofar, Xinzhou Su, Huibin Zhou, and Alan E. Willner, "High-Capacity THz Communications Using Multiple Orbital-Angular-Momentum Beams", **Invited Paper, 5th OAM Transmission (OAMT) Workshop WS05, IEEE International Conference on Communications (ICC),** paper #1570882583, Rome, Italy, May 2023.

45. Alan E. Willner, "Sculpting Waves with Complex Structures," **Invited Presentation, Franklin Medal Symposium Celebrating Prof. Engheta**, Villanova University, Villanova, PA, April 2023.

46. Runzhou Zhang, Xinzhou Su, Hao Song, Huibin Zhou, Moshe Tur, and Alan E. Willner, "Automatic Turbulence Resilience in Self-Coherent Free-Space Optical Communications," **IEEE/Optica Conference on Optical Fiber Communications (OFC), Invited Paper,** paper **M1J.4**, March 2023 (Optica, Washington, D.C., 2023).

47. Yijie Shen, Qiwen Zhan, Logan G. Wright, Demetrios N. Christodoulides, Frank W. Wise, Alan E. Willner, Zhe Zhao, Kai-heng Zou, Chen-Ting Liao, Carlos Hernández-García, Margaret Murnane,

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48. Alan E. Willner, "Advances in Probing of Turbulent Media Using Spatially Structured Light," **Invited Paper, Conference QW102: Quantum Sensing, Imaging, and Precision Metrology, Quantum West Symposium, SPIE Photonics West Conference,** paper **12447-98**, San Francisco, CA, Jan. 2023.

49. Alan E. Willner, "Optical Communications: Innovations and Applications Abound," **Optica Invited Webinar,** Sept. 2022.

50. Alan E. Willner, Xinzhou Su, Huibin Zhou, Amir Minoofar, Zhe Zhao, Runzhou Zhang, Moshe Tur, Andreas F Molisch, Doohwan Lee, and Ahmed Almaiman, "High-Capacity Terahertz Communication Systems Based on Multiple Orbital-Angular-Momentum Beams," **Invited Paper, Journal of Optics**, vol. **24**, no. 12, paper number: 124002, 2022.

51. Alan E. Willner, "Optical Communications: Innovations ad Applications Abound," **Keynote Talk, International Commission for Optics (ICO), TU Dresden,** Dresden, Germany, Sept. 2022.

52. Alan E. Willner, "Integrated Circuits for High-Capacity Optical and THz Communication Links Based on OAM Beams," **Invited Paper, 3rd generation metamaterials (METAMATERIALS 3.1) symposium 2022**, Centraro, Italy, Aug. 2022.

53. Jorge Gomez-Ponce, Naveed A. Abbasi, Alan E. Willner, Charlie J. Zhang, and Andreas F. Molisch, "Directionally Resolved Measurement and Modeling of THz Band Propagation Channels," **Invited Paper, IEEE Open Journal of Antennas and Propagation,** vol. **3**, pp. 663–686, Jun. 2022.

54. Amir Minoofar, Xinzhou Su, Huibin Zhou, Runzhou Zhang, Fatemeh Alishahi, Kaiheng Zou, Hao Song, Kai Pang, Shlomo Zach, Moshe Tur, Andreas F. Molisch, Hirofumi Sasaki, Doohwan Lee, and Alan E. Willner, "Experimental Demonstration of Sub-THz Wireless Communications Using Multiplexing of Laguerre-Gaussian Beams When Varying Two Different Modal Indices," **Invited Paper, IEEE/Optica Journal of Lightwave Technology**, vol. **40**, no. 10, pp. 3285-3292, May 2022.

55. Huibin Zhou, Nanzhe Hu, Xinzhou Su, Runzhou Zhang, Haoqian Song, Hao Song, Kai Pang, Kaiheng Zou, Amir Minoofar, Brittany Lynn, Moshe Tur, and Alan E. Willner, "Experimental Demonstration of a 100-Gbit/s 16-QAM Free-Space Optical Link Using a Structured Optical "Bottle Beam" to Circumvent Obstructions," **Invited Paper, IEEE/Optica Journal of Lightwave Technology**, vol. **40**, no. 10, pp. 3277-3284, May 2022.

56. Alan E. Willner, "Advances in Utilizing OAM Multiplexing for Communication Systems," **Invited Presentation, International Conference on Optical Angular Momentum (ICOAM),** Tampere, Finland, June 2022.

57. Alan E. Willner, "Optical Signal Processing and Networking Functions Using Nonlinear Wave Mixing", **Invited Presentation, International All-Optical Signal Processing Workshop, Aston Institute of Photonic Technologies (AiPT)**, April 2022.

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58. Alan E. Willner, "Optical Communications: Innovations and Applications Abound," **Internal Faculty Seminar, CILQ Institute, USC,** Feb. 2022.

59. Alan E. Willner, "Optical Communications: Innovations and Applications Abound," **Invited Presentation, Celebrate the 60th Anniversary of the Fiber Laser, The National Academy of Sciences, India (NASI) - Delhi Chapter,** Jan. 2022.

60. Alan E. Willner, "Tunable and Broadband Photonic Integrated Circuits Using Metasurfaces for the Generation and Detection of Orbital-Angular-Momentum Beams," **Keynote Paper, Conference on Quantum Sensing and Nano Electronics and Photonics XVIII, SPIE Photonics West,** paper **12009-44**, San Francisco, CA, Jan. 2022.

61. Amir Minoofar Fatemeh Alishahi, Ahmad Fallahpour, Kaiheng Zou, Narek Karapetyan, Jonathan Habif, and Alan E. Willner, "Remotely Biasing, Controlling, and Monitoring a Network Routing Node based on Optically Provided Signals," **Invited Paper, Conference of Metro and Data Center Optical Networks and Short Reach Links V, SPIE Photonics West,** paper **12027-4**, San Francisco, CA, Jan. 2022.

62. Alan E. Willner, "Spatio-Temporal Pulses with Controllable Propagation Properties based on a Combination of Spatial Modes on Different Frequency Comb Lines," **Invited Paper, Conference on Optical and Quantum Sensing and Precision Metrology II, SPIE Photonics West,** paper **12016-55**, San Francisco, CA, Jan. 2022.

63. Alan E. Willner, "Optical Communications: Innovations and Applications Abound," **Invited Colloquium, Institute of Optics**, University of Rochester, Rochester, NY, Nov. 2021.

64. Alan E. Willner, "Optical Communications: Innovations and Applications Abound," **Invited Seminar, IEEE Photonics Society Student Chapter, University of Laval**, Quebec, Canada, Nov. 2021.

65. Alan E. Willner, "Lessons Learned in Optical Communications," **Invited Presentation, 2021 Workshop of "111" Program and International Cooperation Research Center of China, School of Information Science and Technology,** Southwest Jiaotong University (SWJTU), China, Dec. 2021.

66. Hao Song, Huibin Zhou, Kaiheng Zou, Runzhou Zhang, Kai Pang, Haoqian Song, Amir Minoofar, Xinzhou Su, Nanzhe Hu, Cong Liu, Robert Bock, Brittany Lynn, Shlomo Zach, Moshe Tur, and Alan E. Willner, "Demonstration of Recovering Orbital-Angular-Momentum Multiplexed Channels Using a Tunable, Broadband Pixel-Array-based Photonic-Integrated-Circuit Receiver," **Invited Paper, IEEE/Optica Journal of Lightwave Technology,** vol. 40, no. 5, pp. 1346-1352, March 2022.

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68. Alan E. Willner, "Orbital-Angular-Momentum of Electromagnetic Waves: Principles and Applications," **Invited Colloquium, USC Dept. of Physics and Astronomy Colloquium Series**, Sept. 2021,

69. Alan E. Willner, "High-Capacity Optical, THz, and Millimeter-Wave Communications Using Multiple Orbital-Angular-Momentum Beams," **Invited Paper, Metamaterials Congress,** paper **MCPCA83316**, Sept. 2021.

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71. Alan E. Willner, "Mitigation of Intra-Modal-Group Power Coupling of Few-Mode Fiber," **Invited Paper, IEEE Photonics Conference (IPC) 2021,** paper **TuF4.3**, Oct. 2021 (IEEE, Piscataway, NJ, 2021).

72. Alan E. Willner, "Optical Communications: Innovations and Applications Abound," **Plenary Paper, Applied Optics and Photonics China**, Beijing, China, July 2021.

73. Alan E. Willner, "Optical Communications: Innovations and Applications Abound," **Invited Presentation, Distinguished Lecture, Institute for Broadband Research and Innovation (IBRI), Soochow University**, Jiangsu, China, July 2021.

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74. Alan E. Willner, "Optical Communications Innovations for Free-Space and Optical-Signal-Processing Applications," **Invited Paper, IPEC Workshop,** June 2021.

75. Alan E. Willner, "Lessons Learned in Data Transmission and Processing in Optical Communication Systems," **Invited Tech Talk, IEEE/OSA Conference on Optical Fiber Communications (OFC),** June 2021.

76. Alan E. Willner, "Signal Processing Techniques that Impact Optical Communications," **Invited Paper, IEEE Radio Frequency Integrated Circuits Symposium, Whorkshop on Coherent Optical Communications for Cloud Data Centers, Metro, and Submarine Networks,** Atlanta, GA, June 2021.

77. Alan E. Willner, "Optical Communications: Innovations and Applications Abound," **Plenary Paper**, **APS/IEEE/OSA Conference on Lasers and Electro-Optics (CLEO),** San Jose, CA, May 2021 (Optical Society of America, Washington, D.C., 2021).

78. Alan E. Willner, "Free-Space Quantum Communication Links using Orbital-Angular-Momentum Encoding," **Keynote Paper, Quantum Engineering Workshop - Theory & Practice,** May 2021.

79. Alan E. Willner, "High-Capacity, Free-Space Optical and Millimeter-Wave Communications Using Mode-Division-Multiplexing," **Plenary Paper, China Microwave Week (CMW),** Nanjing, China, May 2021.

80. Alan E. Willner, "High-Capacity Optical and Millimeter-Wave Communications using Multiple Orbital-Angular-Momentum Beams," **Invited Colloquium, Department of Physics and Astronomy, University of New Mexico**, Albuquerque, New Mexico, Feb. 2021.

81. Alan E. Willner, "OAM Light for Communications," **Invited Paper, OSA Optics & Photonics News**, vol. **32**, no. 6, pp. 34-41, 2021.

82. Alan E. Willner, Z. Zhao, C. Liu, R. Zhang, H. Song, K. Pang, K. Manukyan, H. Song, X. Su, G. Xie, Y. Ren, Y. Yan, M. Tur, A.F. Molisch, R.W. Boyd, H. Zhou, N. Hu, A. Minoofar, and H. Huang, "Perspectives on Advances in High-Capacity, Free-Space Communications Using Multiplexing of Multiple Orbital-Angular-Momentum Beams," **Invited Perspective**, **APL Photonics**, vol. **6**, Article number: 030901, 2021.

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83. Karapet Manukyan, M. Zahirul Alam, Cong Liu, Kai Pang, Hao Song, Zhe Zhao, Moshe Tur, Robert W. Boyd, and Alan E. Willner, "Dependence of the Coupling Properties between a Plasmonic Antenna Array and a Sub-Wavelength Epsilon-Near-Zero Film on Structural and Material Parameters," **Invited Paper, Applied Physics Letters,** vol. **118,** Article number: 241102, 2021.

84. Alan E. Willner and Zhe Zhao, "Spatiotemporal Beams that Combine Two Orbital-Angular Momenta Using a Frequency Comb," **Invited Paper, SPIE Photonics West**, paper **11700-108**, San Francisco, CA, March 2021.

85. Alan E. Willner, "Dynamic Spatiotemporal Beams that Combine Two Independent and Controllable Orbital-Angular-Momenta Using Multiple Optical-Frequency-Comb Lines," **Invited Paper, SPIE Photonics West,** San Francisco, CA, March 2021.

86. Alan E. Willner and Cong Liu, "Perspective on Using Structured Light for Enhanced Capacity in Mode-Division-Multiplexed Free-Space Optical Communication Links," **Invited Paper, Nanophotonics,** vol. **10**, no. 1, pp. 225-233, 2021.

87. Alan E. Willner, "High-Capacity Optical Communications Using Multiple Orbital-Angular-Momentum Beams," **Plenary Paper, Global Summit and Expo on Laser, Optics and Photonics (GSELOP),** Paris, France, Aug. 2021.

88. Alan E. Willner, "Recent Advances in High-Capacity Free-Space Communication Links Using Mode-Division Multiplexing," **Keynote Paper, IEEE GLOBECOM, Workshop on High-Capacity Wireless Communications**, Taipei, Taiwan, Dec. 2020.

89. Alan E. Willner, "High-Capacity Optical and Millimeter-Wave Communications Using Multiple Orbital-Angular-Momentum Beams," **Invited Seminar, Electrical & Computer Engineering, Brigham Young University,** Provo, UT, Nov. 2020.

90. Alan E. Willner, "High-Capacity Optical and Millimeter-Wave Communications Using Multiple Orbital-Angular-Momentum Beams," **Invited Presentation, Distinguished Colloquium Speaker, School of Electrical Engineering and Computer Science, The Pennsylvania State University**, Centre County, PA, Oct. 2020.

91. Alan E. Willner, Ahmad Fallahpour, Kaiheng Zou, Fatemeh Alishahi, and Huibin Zhou, "Optical Signal Processing Aided by Optical Frequency Combs," **Invited Paper, IEEE Journal of Selected Topics in Quantum Electronics**, vol. **27**, no. 2, article number: 7700916, 2020.

92. Alan E. Willner, "Advances in High-Capacity Optical Communications Using Multiple Structured Beams," **Invited Paper, APS/IEEE/OSA Conference on Lasers and Electro-Optics (CLEO),** paper **JM4N.3,** San Jose, CA, May 2020 (Optical Society of America, Washington, D.C., 2020).

93. Alan E. Willner, "High-Capacity Free-Space Optical and Millimeter-Wave Communications Using Mode-Division-Multiplexing," **Plenary Paper, 29th Wireless and Optical Communications Conference (WOCC),** Newark, NJ, May 2020.

94. Huibin Zhou, Runzhou Zhang, Hao Song, Nanzhe Hu, Haoqian Song, Kaiheng Zou, Xinzhou Su, Zhe Zhao, Kai Pang, Ahmed Almaiman, Cong Liu, Amir Minoofar, Brittany Lynn, Daeyoung Park, Robert W. Boyd, Moshe Tur, and Alan E. Willner, "Demonstration of Turbulence Resiliency in a Mode-, Polarization-, and Wavelength-Multiplexed Free-Space Optical Link Using Pilot-Assisted Optoelectronic Beam Mixing," **Invited Paper, IEEE/Optica Journal of Lightwave Technology**, vol. 40, no. 3, pp. 588-596, Feb. 2022.

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96. Haoqian Song, Hao Song, Runzhou Zhang, Karapet Manukyan, Long Li, Zhe Zhao, Kai Pang, Cong Liu, Ahmed Almaiman, Robert Bock, Brittany Lynn, Moshe Tur, Alan E Willner, "Experimental Mitigation of Atmospheric Turbulence Effect Using Pre-Signal Combining for Uni- and Bi-directional Free-Space Optical Links with Two 100-Gbit/s OAM-Multiplexed Channels," **Invited Paper, IEEE/OSA Journal of Lightwave Technology**, vol. **38**, no. 1, pp. 82-89, 2020.

97. Alan E. Willner, "Optical Communications Using Orbital Angular Momentum Beams," **Invited Presentation, SRC/SIA/DoE Decadal Plan Workshop on New Trajectories for Communication**, San Diego, CA, Feb. 2020.

98. Alan E. Willner, "Using Kerr Frequency Combs for Optical Signal Processing Functions," **Invited Paper**, **Society of Photo-Instrumentation Engineers (SPIE) Optics and Photonics, Photonics West, Optical, Opto-Atomic and Entanglement-Enhanced Precision Metrology II,** paper **11296-79**, San Francisco, CA, Feb. 2020 (SPIE, Bellingham, Wash., 2020).

99. Alan E. Willner, "High-Capacity Free-Space Communication Links Using Mode-Division Multiplexing," **Keynote Paper, IEEE GLOBECOM, Workshop on High-Capacity Point-to-Point Wireless Communications**, Waikoloa, HI, Dec. 2019.

100. Alan E. Willner, "Industry Podium Talk: High-Capacity Free-Space Communication Links Using Mode-Division Multiplexing," **Invited Presentation, Industry Podium Talk, IEEE GLOBECOM,** Waikoloa, HI, Dec. 2019.

101. Alan E. Willner, "OAM Light for Classical and Quantum Communications," **Keynote Presentation**, **Materials Research Society Fall Meeting, Symposium on Bridging the Gap Between Academia and Industry in Electronics and Photonics**, Boston, MA, Dec. 2019.

102. Alan E. Willner, "High-Capacity Communications Using Multiplexing of Multiple Orbital-Angular-Momentum Beams," **Invited Presentation, Distinguished Lecture Series**, **Department of Electrical and Computer Engineering, University of Delaware,** Newark, Delaware, Nov. 2019.

103. Alan E. Willner, "High-Capacity Optical Communications Using Multiplexing of Multiple Orthogonal Beams," **Plenary Talk, IEEE/OSA/SPIE Asia Communications and Photonics Conference (ACP)**, Chengdu, China, Nov. 2019.

104. Alan E. Willner, "Modal Crosstalk Issues in OAM-Based Optical Communication Systems," **Invited Presentation**, **5th International Conference on Optical Angular Momentum (ICOAM),** Ottawa, Canada, Jun. 2019.

105. Peicheng Liao and Alan E. Willner, "Optical Signal Processing Functions Using Frequency Combs," **Invited Presentation, International Symposium on Ultrafast Photonic Technologies (ISUPT), Workshop on Advanced Electronic and Photonic Signal Processing Technologies for Ultra-high Capacity Communications,** NAPA, CA, June 2019.

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106. Alan E. Willner, "“Twisted Light”: High-Capacity Optical Communications Using Multiplexing of Multiple Orbital-Angular-Momentum Beams," **Invited Presentation, Applied Physics Colloquium,** School of Engineering and Applied Science, Harvard University, Cambridge, MA, April 2019.

107. Alan E. Willner, "Reconfigurable Optical Signal Processing Functions using Frequency Combs," **Invited Paper, Optical Fiber Communications (OFC) Workshop on Optical and RF Photonic Signal Processing Based on Frequency Combs**, San Diego, CA, Mar. 2019 (Optical Society of America, Washington, D.C., 2019).

108. Paul F. McManamon, Armand Vedadi, Alan E. Wilner, Dipayan Choudhary, and Ohad Harlev, "A Revolutionary Optical Hyper Data Center," **Invited Paper, Society of Photo-Instrumentation Engineers (SPIE) Optics and Photonics, Optical Engineering and Applications,** paper 11125-11, San Diego, CA, Aug. 2019 (SPIE, Bellingham, Wash., 2019).

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110. Peicheng Liao, Changjing Bao, Ahmed Almaiman, Arne Kordts, Maxim Karpov, Martin Hubert Peter Pfeiffer, Lin Zhang, Fatemeh Alishahi, Yinwen Cao, Kaiheng Zou, Ahmad Fallahpour, Ari N. Willner, Moshe Tur, Tobias J. Kippenberg, and Alan E. Willner, "Demonstration of Multiple Kerr-Frequency-Comb Generation Using Different Lines from Another Kerr Comb Located up to 50 km Away," **Invited Paper**, **IEEE/OSA Journal of Lightwave Technology**, vol. **37**, no. 2, pp. 579-584, 2019.

111. Fatemeh Alishahi, Amirhossein Mohajerin-Ariaei, Ahmad Fallahpour, Yinwen Cao, Ahmed Almaiman, Peicheng Liao, Changjing Bao, Bishara Shamee, Kaiheng Zou, Huibin Zhou, Ari N Willner, Joseph D Touch, Moshe Tur, Carsten Langrock, Martin M Fejer, Alan E Willner, "Optical Mitigation of Interchannel Crosstalk for Multiple Spectrally Overlapped 20 Gbaud QPSK/16-QAM WDM Channels Using Nonlinear Wave Mixing," **Invited Paper**, **IEEE/OSA Journal of Lightwave Technology**, vol. **37**, no. 2, pp. 548-554, 2019.

112. Alan E. Willner, "Free-Space Quantum Communication Links using Orbital-Angular-Momentum," **Keynote Paper**, **Society of Photo-Instrumentation Engineers (SPIE) Photonics West, Quantum Sensing and Nano Electronics and Photonics XVI,** paper **10926-105**, San Francisco, CA, Feb. 2019 (SPIE, Bellingham, Wash., 2019).

113. Alan E. Willner, "Advances in Using Orbital-Angular-Momentum Beams for Sensing and Imaging Applications," **Invited Paper**, **Society of Photo-Instrumentation Engineers (SPIE) Photonics West, Optical, Opto-Atomic, and Entanglement-Enhanced Precision Metrology,** paper **10934-39**, San Francisco, CA, Feb. 2019 (SPIE, Bellingham, Wash., 2019).

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117. Alan E. Willner, "All-Optical Quantum Networking," **Plenary Presentation, Workshop on Quantum Networks for Open Science, U.S. Department of Energy Office of Advanced Scientific Computing Research**, Rockville, Maryland, Sept. 2018.

118. Alan E. Willner, "Some Practical Issues with Free-Space OAM-Based Optical Communications," **Invited Presentation, APS/IEEE/OSA Conference on Lasers and Electro-Optics Pacific Rim (CLEO-PR), Workshop on Tailored Complex Optical Fields: from Twisted Light to Structured Light**, Hong Kong, July 2018 (Optical Society of America, Washington, D.C., 2018).

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120. Alan E. Willner, "Free-Space Quantum Communication Links using Orbital-Angular-Momentum," **Invited Paper, OSA Imaging and Applied Optics Congress, Application of Lasers for Sensing & Free Space Communication**, paper **SW2H.4**, Orlando, June 2018 (OSA, Washington, DC, 2018).

121. Alan E. Willner, "Adaptive Optics in Optical Communication Systems," **Invited Paper, OSA Imaging and Applied Optics Congress, Adaptive Optics: Methods, Analysis and Applications**, paper **OTh2F.2**, Orlando, June 2018 (OSA, Washington, DC, 2018).

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131. Alan E. Willner, "High-Capacity Optical Communications Using Multiplexing of Multiple Orbital-Angular-Momentum Beams," **Distinguished Lecture Series**, **Department of Electrical & Computer Engineering, George Washington University,** Washington, D.C., Sept. 2017.

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133. Alan E. Willner, "Structured Light Using OAM and Wavelength Domains for Terabit/sec Communications," **Invited Presentation**, **APS/IEEE/OSA Conference on Lasers and Electro-Optics (CLEO)**, San Jose, CA, May 2017 (Optical Society of America, Wash., D.C., 2017).

134. Alan E. Willner, "High-Capacity Optical and Millimeter-Wave Communications Using Multiplexing of Multiple Orbital-Angular-Momentum Beams," **Invited Seminar, Armstrong Memorial Distinguished Lecture and Dept. of Electrical Engineering Distinguished Lecture, Columbia University**, New York, NY, Dec. 2017.

135. Alan E. Willner, "High-Capacity Optical Communications Using Multiplexing of Multiple Orbital-Angular-Momentum Beams," **Invited Colloquium, Department of Physics, University of Colorado at Boulder**, Boulder, CO, March 2017.

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137. Alan E. Willner, "Design Challenges and Potential Mitigation Approaches for Orbital Angular Momentum-Multiplexed Free-Space Links," **Keynote Presentation**, **Society of Photo-Instrumentation Engineers (SPIE) Photonics West, Quantum Sensing and Nano Electronics and Photonics XIV**, paper 10111-96, San Francisco, CA, Feb. 2017 (SPIE, Bellingham, Wash., 2017).

138. Alan E. Willner, "Optical Delays to Achieve Optical Signal Processing Functions," **Invited Paper**, **Society of Photo-Instrumentation Engineers (SPIE) Photonics West, Slow Light, Fast Light, and Opto-Atomic Precision Metrology X,** paper 10119-59, San Francisco, CA, Feb. 2017 (SPIE, Bellingham, Wash., 2017).

139. Moshe Tur, Guodong Xie and Alan Willner, "Fiber Amplifiers and Lasers using Orbital Angular Momentum (OAM) Optical Modes," **Invited Paper, IFLA - International Meeting on Fiber Lasers and Applications**, Tel Aviv University, Israel, Feb. 2017.

140. Alan E. Willner, "High-Capacity Optical Communications Using Multiplexing of Multiple Orbital-Angular-Momentum Beams," **Distinguished Lecture Series**, **School of Computing and Information Science, Florida International University,** Miami, FL, Jan. 2017.

141. Alan E. Willner, Yongxiong Ren, Guodong Xie, Yan Yan, Long Li, Zhe Zhao, Jian Wang, Moshe Tur, Andreas F. Molisch, and Solyman Ashrafi, "Recent Advances in High-Capacity Free-Space Optical and Radio-Frequency Communications using Orbital Angular Momentum Multiplexing", **Invited Paper, Philosophical Transactions of the Royal Society A,** vol. **375**, no. 2087, pp. 1-18, Feb. 2017.

142. Halina Rubinsztein-Dunlop, Andrew Forbes, M.V. Berry, M.R. Dennis, David L. Andrews, Masud Mansuripur, Cornelia Denz, Christina Alpmann, Peter Banzer, Thomas Bauer, Ebrahim Karimi, Lorenzo Marrucci, Miles Padgett, Monika Ritsch-Marte, Natalia M. Litchinitser, Nicholas P. Bigelow, C. Rosales-Guzmán, A Belmonte, J.P. Torres, Tyler W. Neely, Mark Baker, Reuven Gordon, Alex Stilgoe, Jacquiline Romero, Andrew G. White, Robert Fickler, Alan E. Willner, Guodong Xie, Benjamin McMorran, and Andrew M. Weiner, "Roadmap on Structured Light", **Invited Paper, Journal of Optics**, vol. **19**, no. 1, pp. 1-52, Jan. 2017.

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144. Alan E. Willner, "High Capacity Optical Communications using Orbital-Angular Momentum Beam Multiplexing," **Plenary Presentation, The International Conference on Fiber Optics and Photonics (PHOTONICS 2016)**, paper W1A.3, the Indian Institute of Technology, Kanpur,High-capacity

145. Alan E. Willner, "High-Capacity Communications using Multiplexing of Multiple Orbital-Angular-Momentum Beams," **Plenary Presentation, Physics of Quantum Electronics (PQE) Meeting**, Snowbird, UT, Jan. 2017.

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146. Alan E. Willner, "Innovations Abound in Functional Optical Communications," **Plenary Presentation**, **IEEE/OSA/SPIE Asia Communications and Photonics Conference (ACP)**, Wuhan, China, Nov. 2016 (Optical Society of America, Washington, D.C., 2016).

147. Alan E. Willner, "Perspectives on Using OAM Multiplexing and Encoding for Communications," **Invited Paper, IEEE/OSA/SPIE Asia Communications and Photonics Conference Workshop on Twisting Light with Orbital Angular Momentum (OAM): Advances and Opportunities**, Wuhan, China, Nov. 2016 (Optical Society of America, Washington, D.C., 2016).

148. Joe Touch, Yinwen Cao, Morteza Ziyadi, Ahmed Almaiman, Amirhossein Mohajerin Ariaei, Alan E. Willner, "Digital Optical Processing of Optical Communications: Towards an Optical Turing Machine," **Invited Paper, Journal of Nanophotonics**, vol. **6**, no. 3, pp. 507-530, 2017.

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150. Alan E. Willner, Long Li, Guodong Xie, Yongxiong Ren, Hao Huang, Yang Yue, Nisar Ahmed, Moshe J. Willner, Asher J. Willner, Yan Yan, Zhe Zhao, Zhe Wang, Cong Liu, Moshe Tur, and Solyman Ashrafi, "Orbital-Angular-Momentum-Based Reconfigurable Optical Switching and Routing," **Invited Paper, Photon. Res.**, vol. **4**, no. 5, pp. B5-B8, 2016.

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151. Alan E. Willner, "Twisted Light Could Dramatically Boost Data Rates," **Invited Feature Paper, IEEE Spectrum**, pp. 34-39, New York, August 2016.

152. Alan E. Willner, "Tunable Optical Delays with Complex Weights to Achieve Reconfigurable and High-Speed Optical-Signal-Processing Functions," **Invited Paper, IEEE Photonics Society Summer Topical Meeting**, paper MD1.2, Newport Beach, California, July 2016 (IEEE, Piscataway, NJ, 2016).

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155. Alan E. Willner, "Emulating and Mitigating Atmospheric Effects in Free-Space OAM-based Communications Links," **Invited Paper, Propagation Through and Characterization of Atmospheric and Oceanic Phenomena**, paper. Tu4A.3, Washington, DC, June 2016.

156. Alan E. Willner, "Physics Behind Optical Fiber Communications: Technologies that Drive the Internet Capacity Growth," **Invited Paper, American Physical Society (APS) March Meeting 2016**, Baltimore, March 2016.

157. Alan E. Willner, "Innovation in Photonics R&D," **Invited Presentation, Lloyd Greif Center for Entrepreneurial Studies, Marshall School of Business**, USC, Jan. 28, 2015 and Jan. 26, 2016.

158. Yongxiong Ren, Guodong Xie, Asher J. Willner, Nisar Ahmed, Long Li, Zhe Wang, and Alan E. Willner, "Challenges and Opportunities in using Orbital Angular Momentum for Communication Links," **Invited Presentation, Asia Communications and Photonics Conference (ACP) Workshop on Recent Advances**

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159. Alan E. Willner, "High-Capacity Optical Communications using Multiplexing of Multiple Orbital-Angular-Momentum Modes," **Invited Presentation**, **2015 IEEE Photonics Santa Clara Valley Photonics Society Chapter,** Santa Clara, CA, Nov. 2015 (IEEE/LEOS, Piscataway, New Jersey, 2015).

160. Alan E. Willner, "High-Capacity Free-Space Optical Communications Using Multiplexing of Multiple Orbital-Angular-Momentum Modes," **Keynote Presentation**, **Annual International Workshop (IWOW) of the EU COST Action 1101 OPTICWISE**, Istanbul, Turkey, Sept. 2015.

161. Alan E. Willner, "The National Photonics Initiative and Integrated Photonics," **Invited Presentation**, **New York Photonics Annual Meeting**, Rochester, NY, Sept. 2015.

162. Alan E. Willner, "Optics and Photonics; Essential Technologies for our World", **Plenary Presentation**, **New Mexico International Year of Light Event**, Albuquerque, NM, Sept. 2015.

163. Alan E. Willner, "High-speed Communications using Multiplexing of Multiple Orbital-Angular-Momentum Beams," **Plenary Presentation**, **3rd International Conference on Optical Angular Momentum (ICOAM),** paper OAM01-65, New York, NY, Aug. 2015 (SPIE, Bellingham, Wash., 2015).

164. Jeng-Yuan Yang, Youichi Akasaka, Motoyoshi Sekiya, Amirhossein Mohajerin Ariaei, Morteza Ziyadi, Yinwen Cao, Ahmed Almaiman, Alan Willner, Joe Touch, Sigehiro Takasaka, and Ryuichi Sugizaki, "PSA and PSA-Based Optical Regeneration for Extending the Reach of Spectrally Efficient Advanced Modulation Formats," **Invited Paper, IEEE Photonics Society Summer Topical Meeting**, paper TuF2.1, Nassau, Bahamas, July 2015 (IEEE, Piscataway, NJ, 2015).

165. Alan E. Willner, "Increasing Transmission Capacity and Spectral Efficiency in Millimeter-wave Free-Space Links by Multiplexing of Multiple Orbital-Angular-Momentum Beams," **Invited Presentation, Intel Workshop**, Portland, July 2015.

166. Alan E. Willner, "High-Capacity Millimeter-Wave Communications using Orbital-Angular-Momentum Multiplexing, " **Invited Presentation, URO 5G Seminar Series**, Webcast, June 2015.

167. Alan E. Willner, Hao Huang, Yan Yan, Yongxiong Ren, Nisar Ahmed, Guodong Xie, Changjing Bao, Long Li, Yinwen Cao, Zhe Zhao, Zhe Wang, Martin P. J. Lavery, Moshe Tur, Siddharth Ramachandran, Andreas F. Molisch, Nima Ashrafi, and Solyman Ashrafi, "Optical Communications using Orbital Angular Momentum Beams," **Invited Paper**, **Advances in Optics and Photonics**, vol. **7**, no. 1, pp. 66-106, 2015.

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168. Mohammad Reza Chitgarha, Amirhossein Mohajerin-Ariaei, Yinwen Cao, Morteza Ziyadi, Salman Khaleghi, Ahmed Almaiman, Joseph D. Touch, Carsten Langrock, Martin M. Fejer, and Alan E. Willner, "Tunable

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170. Avi Motil, Ido Sovran, Raanan Hadar, Arik Bergman, Asher Vokoboink, Alan Willner, and Moshe Tur, "Optical Communications using Multiplexing of Multiple Orbital-Angular-Momentum Beams," **Invited Paper**, **20th Opto-Electronics and Communications Conference (OECC)**, paper WE9F-4, Shanghai, China, June 2015.

171. Alan E. Willner, "Optics and Photonics: Essential Technologies for Society," **Invited Seminar**, **World Metrology Day Event, National Institute of Standards and Technology (NIST)**, Gaithersburg, MD, May 2015.

172. Alan E. Willner, "Real-time Analytics in Optical Networks: Correlation and Performance Monitoring," **Invited Presentation**, **6th Danish-Californian Workshop on Big Data and Real Time Analytics in Photonics**, University of California, Los Angeles, Mar. 2015.

173. Alan E. Willner, "Tunable Optical Delays for Implementing High-speed Optical Signal Processing Functions," **Invited Paper, Society of Photo-Instrumentation Engineers (SPIE) Photonics West**, **Slow Light, Fast Light, and Opto-Atomic Precision Metrology VIII Conference**, paper 9378-10, San Francisco, CA, Feb. 2015 (SPIE, Bellingham, Wash., 2015).

174. Alan E. Willner, "Activities of the National Photonics Initiative Related to Advanced Lithography," **Plenary Presentation**, **2015 SPIE Advanced Lithography Symposium,** San Jose, CA, Feb. 2015 (SPIE, Bellingham, Wash., 2015).

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176. Alan E. Willner, "Structured Light," **Invited Presentation, Photonically Optimized Embedded Microprocessors (POEM) Workshop, DARPA MTO**, Phoenix, October 2014.

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181. Alan E. Willner, "Optical Communications using Multiplexing of Multiple Orbital-Angular-Momentum Beams," **Plenary Presentation**, **19th Opto-Electronics and Communications Conference (OECC),** Melbourne, Australia, July 2014.

182. Alan E. Willner, "Exciting Prospects for Optical Signal Processing," **Plenary Presentation, Seventh International Photonics and OptoElectronics Meetings (POEM 2014)**, Wuhan, China, June 2014.

183. Alan E. Willner, "Free Space Optical Communications Using Orbital Angular Multiplexing: Turbulence Effects," **Invited Presentation, Seventh International Photonics and OptoElectronics Meetings (POEM 2014) Workshop on Orbital Angular Momentum (OAM) and its Applications**, Wuhan, China, June 2014.

184. Alan E. Willner, Yongxiong Ren, Hao Huang, Yan Yan, Nisar Ahmed, Guodong Xie, Jian Wang, Yang Yue, Martin P. J. Lavery, Miles J. Padgett, Moshe Tur, Nenad Bozinovic, and Siddharth Ramachandran, and Long Li,"Optical Communicationsusing Multiplexing of Multiple Orbital-Angular-Momentum Beams," **Invited Paper, Newsletter of the IEEE Lasers and Electro-Optics Society**, June. 2014 (IEEE/LEOS, Piscataway, New Jersey, 2014).

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186. Alan E. Willner, "U.S. Leadership Role in Optical R&D: A Researcher's (and National Academies' Optics and Photonics) Perspective," **Invited Presentation, Optoelectronics Industry Development Association (OIDA) Focus Group Meeting on Integrated Photonics Manufacturing,** Washington, May 2014.

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188. Jian Wang and Alan E. Willner"using Orbital Angular Momentum Modes for Optical Transmission," **Invited Paper**, **IEEE/OSA Conference on Optical Fiber Communications (OFC) and National Fiber Optics Engineers Conference (NFOEC)**, paper W4J.5, San Francisco, CA, Mar. 2014 (Optical Society of America, Washington, D.C., 2014).

189. Joe Touch, Joseph Bannister, Stephen Suryaputra, and Alan E. Willner, "A Design for an Internet Router With a Digital Optical Data Plane," **Invited Paper**, **Society of Photo-Instrumentation Engineers (SPIE) Photonics West**, paper 9008-8, Feb. 2014, San Francisco, CA (SPIE, Bellingham, Wash., 2014).

190. Alan E. Willner, "2D and WDM Correlators using Tunable Optical Delays," **Invited Paper**, **Society of Photo-Instrumentation Engineers (SPIE) Photonics West**, paper 8998-47, Feb. 2014, San Francisco, CA (SPIE, Bellingham, Wash., 2014).

191. Alan E. Willner, "Tbit/s Optical Communications using Multiplexing of Multiple Orbital-Angular-Momentum Modes," **Plenary Presentation**, Optical Society of Korea Winter Meeting, Feb. 2014.

192. Alan E. Willner, "Exciting Prospects for Optical Signal Processing," **Invited Seminar**, KAIST, Daejeon, Korea, Feb. 2014.

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193. Alan E. Willner, "The National Academies' Report on Optics and Photonics: The Road to a National Photonics Initiative," **Invited Paper**, APS March Meeting, Denver, March 2014 (American Physical Society, NY, 2014).

194. Alan E. Willner, "Orbital Angular Momentum Multiplexing," **Invited Presentation**, **5th Danish-Californian Workshop on Photonic Technologies for Communication and Sensing**, University of California, Berkeley, Feb. 2014.

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198. Alan. E. Willner, "Optical Communications using Orbital-Angular-Momentum-Based Multiplexing" **Invited Paper**, **OSA Incubator Workshop on Structured Light in Structured Material**, Washington, DC, Sept. 2013(Optical Society of America, Washington, D.C., 2014).

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200. Alan E. Willner, "National Academies Perspective," **Invited Seminar**, **NSF Workshop on US-based Silicon Photonics Foundry/Fabrication Resources**, Washington, DC, Sept 2013 (Optical Society of America, Wash., D.C., 2013).

201. Alan E. Willner, "National Academies Study on Optics and Photonics: Essential Technologies for Our Nation," **Plenary Presentation**, **IEEE Optical Interconnects Conference**, Santa Fe, NM, May 2013 (IEEE, Piscataway, NJ, 2013).

202. Alan E. Willner, "Orbital Angular Momentum Transmission," **Invited Paper**, **European Conference on Optical Communications (ECOC),** paper Mo.4. A.1, London, Great Britain, Sept. 2013.

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208. Yongxiong Ren, Hao Huang, Guodong Xie, Nisar Ahmed, Baris Erkmen, Nivedita Chandrasekaran, Martin Lavery, Jeffrey Shapiro, Nicholas Steinhoff, Moshe Tur, Miles Padgett, Robert Boyd,and Alan Willner, "Experimental Turbulence Effects on Crosstalk and System Power Penalty over a Free Space Optical Communication link usingOrbital Angular Momentum Multiplexing," **Invited Paper**, **APS/IEEE/OSA Conference on Lasers and Electro-Optics (CLEO)**, paper CM2G.4, San Jose, CA, June 2013 (Optical Society of America, Wash., D.C., 2013).

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211. Alan E. Willner, "Terabit/sec Free-Space Data Transmission using Orbital Angular Momentum," **Invited Paper**, **The 43rd Winter Colloquium on the Physics of Quantum Electronics (PQE)**, Snowbird, UT, Jan. 2013.

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213. Alan E. Willner, "Multiplexing Vortex Beams for Tbit/s Free-Space Optical Communications," **Invited Paper**, **Society of Photo-Instrumentation Engineers (SPIE) Photonics West,** paper 8610-4, Feb. 2013, San Francisco, CA (SPIE, Bellingham, Wash., 2013).

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221. Alan E. Willner and J. Wang, "Optical Communications using Light Beams Carrying Orbital Angular Momentum,"**Invited Paper**, in Special Symposium on "Singular Light: Applications of Vortices, Orbital angular momentum, Bessel and Airy beams," **APS/IEEE/OSA Conference on Lasers and Electro-Optics (CLEO)**, paper JTu2K.1, San Jose, MD, May 2012 (Optical Society of America, Wash., D.C., 2012).

222. Alan E. Willner and Scott R. Nuccio, "Electro-Optic Polymer Modulators," **Invited Paper**, **IEEE/OSA Conference on Optical Fiber Communications (OFC) and National Fiber Optics Engineers Conference (NFOEC),** Los Angeles, CA, Mar. 2012 (Optical Society of America, Washington, D.C., 2012).

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224. Alan E. Willner, "Optical Tapped-Delay-Lines," **Invited Presentation**, in Workshop "All-optical Signal Processing: Next-generation Materials," **IEEE/OSA Conference on Optical Fiber Communications (OFC) and National Fiber Optics Engineers Conference (NFOEC),** Los Angeles, CA, Mar. 2012 (Optical Society of America, Washington, D.C., 2012).

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225. Jian Wang and A. E. Willner, "Review of Robust Data Exchange using Optical Nonlinearities," **InvitedReview Article**, **International Journal of Optics**, Special Issue of "Optical Parametric Processing", vol. **2012**, Article ID 575429, 25 pages (doi:10.1155/2012/575429), 2012.

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232. A.E. Willner, "Nonlinear Optics in Optical Fiber Communications: *For Worse and For Better,*"**Invited Presentation, *Quantum Electronics Seminar,*** Stanford University, Oct. 31, 2011.

233. A.E. Wilner, "T.echnologies in Li.ghtwave: From (Cavity) Modes to (WDM) Nodes," Pl**enary Presentation**, **2011 International Symposium on Information Photonics & Optical Communications**, July 2011, Chengdu, China.

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263. Alan E. Willner, "Acute Need for Optical Chip Fab & Packaging: An Academic User's Perspective," **Invited Presentation**, **Workshop on Photonics Engineering Prototyping Resource** (PEPR) (sponsored by Air Force Research Laboratory), Dayton, OH, July 2009.

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277. Lin Zhang, Muping Song, Raymond G. Beausoleil and Alan E. Willner, "Embedded Ring Resonators," **Invited Paper** for Winner of LEOS Figure Contest, IEEE LEOS Newsletter, vol. 22, no. 6, pp. 21-22, 2008.

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292. A.E. Willner, "Managing Multiple Roles for Faculty: Just say no, sometimes," **Invited Presentation**, **USC's Academic Leadership and Development Workshop on Managing Multiple Roles as Faculty**, November 2007.

293. Alan E. Willner, "Physical-Layer Challenges in Stable, High-Capacity Optical Communication Networks," **Invited Presentation**, Dept. of Applied Physics Seminar Series, Hebrew University, June 6, 2007.

294. A.E. Willner, "Tunable Optical Delay Lines for Switching and Processing," **Invited Paper, IEEE Photonics in Switching Topical Meeting**, San Francisco, Aug. 2007 (IEEE, Piscataway, NJ, 2007).

295. Alan E. Willner, "Physical-Layer Challenges in Stable, High-Capacity Optical Communication Networks," **Invited Colloquium, Institute of Optics**, University of Rochester, Rochester, NY, Feb. 2007.

296. Alan E. Willner, "Monitoring and Channel Measurements to Enable Stable, High-Capacity Optical Networks," **Invited Seminar**, NIST, Boulder, Colorado, Feb. 2007.

297. A.E. Willner, "Leverage the Show Floor to Your Advantage," **Invited Presentation,** Student Activities Workshop, **Conference on Lasers and Electro-Optics (CLEO)**, Baltimore, MD, May 2007 (Optical Society of America, Wash., D.C., 2007).

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323. A.E. Willner, "Monitoring, Security & Routing in High-Capacity Optical Networks," **Invited Paper, Cisco Systems Optical Daze Symposium**, Dec. 2004

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340. A.E. Willner, "Overview of System Applications of EIT Technologies," **Invited Paper**, **Slow Light**, DARPA-Sponsored Workshop, Orlando, Florida, Dec. 2003.

341. A.E. Willner, "Combating Channel-Degrading Effects in Multiple-Wavelength Optical Systems," **Invited Presentation, Nerd Lunch Seminar Series,** Cisco Systems, San Jose, July 2003.

342. A.E. Willner, "Troubles Ahead: Which Impairments Will Drive Higher Levels of OPM?" **Invited Presentation,** Workshop on the Need for Optical Performance Monitoring, **Conference on Optical Fiber Communications (OFC)**, Session MC, Atlanta, Georgia, March 2003.

343. A.E. Willner, "Tunable Dispersion Compensation: The Overlap Between What Research Can Provide and What Industry Needs," **Invited Presentation,** Workshop on Tunable Dispersion Compensation, **Conference on Optical Fiber Communications (OFC)**, Session SE, Atlanta, Georgia, March 2003.

344. A.E. Willner, "Trends and Limitations of Optical Network Technologies," **Plenary Paper, 7th Opto-Electronics and Communications Conference (OECC),** Pacifico Yokohama, Kanagawa, Japan, July 9, 2002.

345. A.E. Willner, "Tunability in Dispersion Compensation," **Invited Paper, IEEE Lasers and Electro-Optics Society Annual Meeting**, Proceedings, Glascow, Scotland, Nov. 2002 (IEEE/LEOS, Piscataway, NJ, 2002).

346. A.E. Willner, "All-Optical Packet-Header-Recognition Techniques," **Invited Paper, IEEE Lasers and Electro-Optics Society Annual Meeting**, Proceedings, Glascow, Scotland, Nov. 2002 (IEEE/LEOS, Piscataway, NJ, 2002).

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349. P. Ebrahimi, Y. Wang, A. B. Sahin, L.-S. Yan, Y. Qian, J. Li, A. E. Willner, "Effects of SBS and Rayleigh Scattering in Densely-Spaced Bidirectional Transmission using Raman Amplification," **Invited Paper, Conference on Lasers and Electro-Optics (CLEO)**, Long Beach, CA, May 2002 (Optical Society of America, Wash., D.C., 2002).

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350. Q. Yu, L.-S. Yan, Z. Pan, and A. E. Willner, "Chromatic Dispersion Monitor for WDM Systems using Vestigial-Sideband Optical Filtering," **Invited Paper, Conference on Optical Fiber Communications** (OFC) '02**,** paper WE3, Anaheim, CA, March 2002 (Optical Society of America, Wash., D.C., 2002).

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351. J. McGeehan, M.C. Hauer, and A.E. Willner, "Digital Optical Correlation for Fiber-Optic Communication Systems," **Invited Paper, Encyclopedia of Telecommunications**, John Proakis, editor, John Wiley and Sons Publishers, New York, 2003.

352. A.E. Willner, "Degrading and Monitoring Issues of Chromatic and Polarization-Mode Dispersion," **Invited Paper, IEEE Lasers and Electro-Optics Society Summer Topical Meeting on Dynamic Enablers of Next-Generation Optical Communications Systems**, Proceedings, paper TuJ1, Quebec City, Canada, July 15-17 (IEEE, Piscataway, NJ, 2002).

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355. A.E. Willner, "Key Limitations in Multiple-Wavelength Optical Systems and Networks" **Plenary Paper, American Vacuum Society, Third International Conference on Microelectronics and Interfaces,** Santa Clara, CA, February 11, 2002.

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357. A.E. Willner, "PMD Emulation," **Invited Paper**, **Instituto Veneto di Scienze Lettere ed Arti**, Special Summer School on Polarization Mode Dispersion, Venice, Italy, June 26, 2002.

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360. A.E. Willner, "Reconfigurable Multiple-Wavelength Optical Systems and Networks," **Invited Paper**, Workshop on MEMs and Optical Switching, **American Society of Mechanical Engineers**, Universal City, CA, June 2001.

361. A.E. Willner, "Chromatic Dispersion Compensators: The Search for Tunability," **Invited Paper, Next Generation Networks Conference,** Boston, MA, Nov. 2001.

362. A.E. Willner, "Capacity Limitations in Multiple-Wavelength Optical Systems," **Invited Paper**, **Symposium for the Stanford Photonics Research Center**, Stanford University, Sept. 14, 2001.

363. A.E. Willner, "Reconfigurable Multiple-Wavelength Optical Systems: Things Change," Invited Paper, **Optical Materials for Future Devices and Systems**, DARPA-Sponsored Workshop, Clearwater Beach, Florida, Sept. 2001.

364. A.E. Willner, "Telecom 2001," **Invited Presentation, Gordon Conference on Nonlinear Optics and Lasers**, Colby-Sawyer College, NH, 2001.

365. A.E. Willner and Q. Yu, "Transmission Limitations due to Polarization Mode Dispersion," **Invited Paper, IEEE Lasers and Electro-Optics Society Summer Topical Meeting on Ultralong Haul DWDM Transmission and Networking**, Proceedings, paper MC2.2, Copper Mountain, Colorado (IEEE, Piscataway, NJ, 2001).

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371. A.E. Willner, "Challenges in Next-Generation WDM Systems," **Invited Paper, DARPA Workshop on WDM**, Los Angeles, CA, June 2001.

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373. A.E. Willner, "Will the Future Look Like the Past?," Duke University's **Photonics in the Forest Workshop**, Convocation of the Fitzpatrick Center for Photonics and Communications Systems, April, 2001.

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387. A.E. Willner, "Critical Issues in Non-Static and Reconfigurable WDM Systems and Networks," **Invited Paper**, **Symposium for the Center for Nonlinear Optical Materials**, Stanford University, Sept. 1999.

388. A.E. Willner, "In Academia, Who's Your Customer?" **Invited Paper,** Workshop on Oprical Communications in Academia, **Conference on Optical Fiber Communications (OFC)**, San Diego, CA, Feb. 1999.

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2. Abdulrahman Alhaddad, Wing Ko, Amir Minoofar, Hongkun Lian, Muralekrishnan Ramakrishnan, Huibin Zhou, Zile Jiang, Xinzhou Su, Narek Karapetyan, Yingning Wang, Ruoyu Zeng, Ahmed Almaiman, Moshe Tur, Jonathan Habif, and Alan E. Willner, “Experimental Demonstration of Optical Pattern Recognition Between Independent QPSK Channels Using Wave Mixing,” **APS/IEEE/Optica Conference on Lasers and Electro-Optics (CLEO)**, accepted for publication, Long Beach, CA, May 2025 (Optica, DC, 2025).

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4. Amir Minoofar, Abdulrahman Alhaddad, Wing Ko, Hongkun Lian, Huibin Zhou, Muralekrishnan Ramakrishnan, Narek Karapetyan, Ahmed Almaiman, Murali Annavaram, Moshe Tur, Jonathan Habif, and Alan E. Willner, “Reconfigurable Optical Recognition of 2 Independent Data Patterns Using Wavelength Multiplexing and Nonlinear Wave Mixing,” **APS/IEEE/Optica Conference on Lasers and Electro-Optics (CLEO)**, accepted for publication, Long Beach, CA, May 2025 (Optica, DC, 2025).

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   **** Selected by the subcommittee as a "Top-Scored Paper" (~5% of the submissions). ****

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114. Yinwen Cao, Kaiheng Zou, Huibin Zhou, Ahmed Almaiman, Peicheng Liao, Fatemeh Alishahi, Ahmad Fallahpour, Karapet Manukyan, and Alan E. Willner, "Demonstration of Tunable Optical Single-Sideband Generation of 20-Gbit/s OOK and PAM4 Data Channels," **IEEE/OSA Conference on Optical Fiber Communications (OFC),** paper **M1B.6**, San Diego, CA, Mar. 2019 (Optical Society of America, Washington, D.C., 2019).

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