

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 *Steven & Kathryn Sample Chaired Professor of Engineering* in the Ming Hsieh Dept. of Electrical & Computer Eng. of the Viterbi School of Eng. at the Univ. of Southern California. 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 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 40-Gbit/s 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), 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), 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, IEEE, IET, OSA and SPIE, 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 >1500 publications (*h-index* ≥ 77 , >33,000 citations, *Google Scholar*), including 1 book, 10 edited books, ~45 US patents, ~47 keynotes/plenaries, ~24 book chapters, >400 refereed journal papers, and >300 invited papers/presentations. His research is 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 **Steven and Kathryn Sample Chaired Professor in Engineering, Distinguished Prof. ('21), Ming Hsieh Dept. of Electrical & Computer Eng., Viterbi School of Engineering, University of Southern California**
• Optical Communication Systems and Networks
- Mar. '15 - present Visiting Professor (Adj. Senior Res. Scientist), Elec. Eng Dept., Columbia Univ.
Sept. '17 - present Visting 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 performs studies that are presented to DARPA Director & Office Directors
- Fall '07 - Summer '12 **Co-Director**, Communications Sciences Institute, EEDept. 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**
• Fiber Optic Wavelength-Division-Multiplexed Communication Systems
- Sept. '84 - Aug. '88 Graduate Research Assistant, **Columbia University**,
Microelectronics Science Lab & NSF Center for Telecommunications Research
• Laser-Fabricated Integrated Optical Components
- 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)

International Fellow of the U.K. Royal Academy of Engineering ('10)

Of the 4 Int'l Fellows elected from the US in '10, the other 3 were Drs. Howard Bruschi (former Westinghouse CTO), Robert Langer (MIT Institute Professor) 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)

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 ('21)

Steven and Kathryn Sample Endowed Chair in Engineering ('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.

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 one of the top 10 universities in China.

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

John Simon Guggenheim Foundation Fellowship ('12)

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.

HONORS: (CONTINUED)

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 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)

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.

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

HONORS: (CONTINUED)

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)

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

Guest Editor, Applied Physics-A (a Springer Verlag journal),
Special Issue on Photonic Interconnects (Dec. 2008)

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:

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

Past-President (2017)

President (2016)

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, 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-'22)

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)

Member, Tingye Li Memorial Scholarship Nomination Review Committee,
Photonics Society of Chinese Americans (PSC) ('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-'19)

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)

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)

PROFESSIONAL ACTIVITIES: (CONTINUED)

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)

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)

PROFESSIONAL ACTIVITIES: (CONTINUED)

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)

Member, External Advisory Committee,
Department of Electrical & Computer Eng., Johns Hopkins Univ. ('09-'12)

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)

PROFESSIONAL ACTIVITIES: (CONTINUED)

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)

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

PROFESSIONAL ACTIVITIES: (CONTINUED)

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)

Member, International Advisory Committee,
3rdInt'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 (ICOON), 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)

PROFESSIONAL ACTIVITIES: (CONTINUED)

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)

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)

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

PROFESSIONAL ACTIVITIES: (CONTINUED)

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,
Photonic Technologies for Communications, IEEE Globecom, 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,

PROFESSIONAL ACTIVITIES: (CONTINUED)

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)**

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

PROFESSIONAL ACTIVITIES: (CONTINUED)

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

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 &

PROFESSIONAL ACTIVITIES: (CONTINUED)

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)

- (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

PROFESSIONAL ACTIVITIES: (CONTINUED)

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,
Optical Society of America (OSA) (1993-1997)

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, '97, '98**

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

**Chair, Optical Communications Committee,
LEOS Annual Meeting '94,'95,'96**

**Standing Technical Committee,
IEEE LEOS, Optical Networks** (1993-1996)

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 (1996)

PROFESSIONAL ACTIVITIES: (CONTINUED)

Chair, Panel on Optical Information and Communications, Workshop on Optical Science and Engineering, National Science Foundation (1994)

**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, 2000

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 '20: **4.95/5.0**, 29 students, 21 had evaluated
2. Spring '19: **4.83/5.0**, 21 students, 18 had evaluated
3. Spring '18: **5.0/5.0**, 27 students, 16 had evaluated
4. Spring '17: **4.91/5.0**, 15 students, 11 had evaluated
5. Spring '16: **4.96/5.0**, 27 students, 27 had evaluated
6. Spring '15: **4.96/5.0**, 27 students, 24 had evaluated
7. Spring '14: **4.84/5.0**, 25 students, 19 had evaluated
8. Spring '13: **5.0/5.0**, 21 students, all had evaluated
9. Spring '12: **4.94/5.0**, 20 students, 18 had evaluated
10. Spring '11: **5.0/5.0**, 22 students, 18 had evaluated
11. Spring '10: **5.0/5.0**, 19 students, 16 had evaluated
12. Spring '09: **5.0/5.0**, 10 students, all had evaluated
13. Fall '07: **5.0/5.0**, 11 students, all had evaluated
14. Fall '06: **5.0/5.0**, 10 students, 9 had evaluated
15. Fall '04: **5.0/5.0**, 11 students, all had evaluated
16. Fall '03: **5.0/5.0**, 7 students, all had evaluated
17. Fall '02: **5.0/5.0**, 11 students, all had evaluated
18. Fall '01: **5.0/5.0**, 21 students, all had evaluated
19. Fall '00: **5.0/5.0**, 20 students, all had evaluated
20. Fall '99: **5.0/5.0**, 22 students, 21 had evaluated
21. Fall '98: **5.0/5.0**, 18 students, all had evaluated
22. Fall '97: **5.0/5.0**, 22 students, all had evaluated
23. Fall '96: **4.92/5.0**, 14 students, all had evaluated
24. Fall '95: **5.0/5.0**, 8 students, all had evaluated
25. Fall '94: **5.0/5.0**, 9 students, all had evaluated
26. Fall '93: **5.0/5.0**, 8 students, all had evaluated
27. 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 Demonstration 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 for Wavelength-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, Reconfigurable Optical 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 Almainan, 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"

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-dimensional 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 the University 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 the University 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 using High-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, University 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”

Lytelopt 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, University 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”

USC ACTIVITIES:

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)

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)

USC ACTIVITIES: (CONTINUED)

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)
13. Title: Polarization-Mode Dispersion Emulator (U.S. Pat. Ser. No. 6,542,650), Co-Inventors w/ A.E. Willner: P. Ebrahimi, E. Ibragimov, R. Khosravani, I.T. Lima, Jr., and C.R. Menyuk. (April 1, 2003)

14. Title: Compensation and Control of Both First-Order and Higher-Order Polarization-Mode Dispersion (U.S. Pat. Ser. No. 6,654,103), Co-Inventors w/ A.E. Willner: S. Lee, L.-S. Yan, and Q. Yu. (Nov. 25, 2003)
15. Title: Compensation for Polarization-Mode Dispersion in Multiple Wavelength-Division Multiplexed Channels Without Separate Compensation for Each Individual Channel (U.S. Pat. Ser. No. 6,603,890), Co-Inventors w/ A.E. Willner: P. Ebrahimi, S.A. Havstad, R. Khosravani, and Y.W. Song. (Aug. 5, 2003)
16. Title: WDM Fiber Amplifiers using Sampled Bragg Gratings (U.S. Pat. Ser. No. 6,621,627), Co-Inventors w/ A.E. Willner: Z. Pan and Y. Xie. (Sept. 16, 2003)
17. Title: Polarization-Division Multiplexing Based on Power Encoding of Two Different Polarization Channels (U.S. Pat. Ser. No. 6,714,742), Co-Inventors w/ A.E. Willner: M.C. Cardakli and M.I. Hayee. (March 30, 2004)
18. Title: Intra-Bit Polarization Diversity Modulation (U.S. Pat. Ser. No. 6,646,774), Co-Inventors w/ A.E. Willner: T. Luo, Z. Pan, A.B. Sahin, Y. Wang, C.-Y. Yu, and Q. Yu. (Nov. 11, 2003)
19. Title: Reconfigurable Optical Recognition of Bit Information in a Digital Data Stream with Different Bit Rates (U.S. Pat. Ser. No. 6,751,416), Co-Inventors w/ A.E. Willner: M.C. Cardakli, D. Gurkan, and S. Lee. (June 15, 2004)
20. Title: Devices and Applications Based on Tunable Waveguiding Bragg Gratings with Nonlinear Group Delays (U.S. Pat. Ser. No. 6,915,040), Co-Inventors w/ A.E. Willner: Y.W. Song and S.M.R. Motaghian Nezam. (July 5, 2005)
21. Title: Optical Dispersion Monitoring Based on Vestigial Sideband Optical Filtering (U.S. Pat. Ser. No. 7,035,538), Co-Inventors w/ A.E. Willner: Z. Pan, L.-S. Yan, and Q. Yu. (April 25, 2006)
22. Title: Monitoring and In-Line Compensation of Polarization Dependent Loss for Lightwave Systems (U.S. Pat. Ser. No. 7,206,517), Co-Inventors w/ A.E. Willner: L.-S. Yan and Q. Yu. (April 17, 2007)
23. Title: Optically Boosted Router (U.S. Pat. Ser. No. 7,369,766), Co-Inventors w/ A.E. Willner: J. Bannister, J. McGeehan, P. Kamath, A. Patel, and J.D. Touch. (May 6, 2008)
24. Title: Code Cycle Modulation: Concept and Implementation (U.S. Pat. Ser. No. 7,616,618), Co-Inventors w/ A.E. Willner: P.V. Kumar, R. Omrani, P. Saghari, and J.D. Touch. (Nov. 10, 2009)
25. Title: Waveguide-Based Dispersion Device (U.S. Pat. Ser. No. 8,483,529), Co-Inventors w/ A.E. Willner: Y. Yue and L. Zhang. (July 9, 2013)
26. Title: Sweep-Free Stimulated Brillouin Scattering-Based Fiber Optical Sensing (U.S. Pat. Ser. No. 8,800,375), Co-Inventors w/ A.E. Willner: M. Tur and A. Voskoboynik. (Aug. 12, 2014)
27. Title: All-optical Tunable Tapped-Delay-Lines using Wavelength Conversion and Chromatic Dispersion Based Delays (U.S. Pat. Ser. No. 8,976,445), Co-Inventors w/ A.E. Willner: S. Khaleghi, M. R. Chitgarha, and O. Yilmaz. (March 10, 2015)
28. Title: On-Chip Two-Octave Supercontinuum Generation Enabled by Advanced Chromatic Dispersion Tailoring in Slotted Waveguides (U.S. Pat. Ser. No. 9,110,219), Co-Inventors w/ A.E. Willner: Y. Yan, Y. Yue, and L. Zhang. (Aug. 18, 2015)
29. Title: Mirrorless-Oscillation in a Waveguide using Non-Degenerate Four-Wave Mixing (U.S. Pat. Ser. No. 9,086,609), Co-Inventors w/ A.E. Willner: Y. Yan and L. Zhang (July 21, 2015)

30. Title: Reconfigurable Optical Transmitter (U.S. Pat. Ser. No. 9,166,721), Co-Inventors w/ A.E. Willner: S. Khaleghi and M. R. Chitgarha. (October 20, 2015)
31. Title: Automatically Locked Homodyne Detection (U.S. Pat. Ser. No. 9,625,320), Co-Inventors w/ A.E. Willner: M. R. Chitgarha, S. Khaleghi, A. Mohajerin-ariaei and M. Ziyadi (Apr. 18, 2017)
32. Title: Systems and Techniques for Orbital Angular Momentum Based Reconfigurable Switching (U.S. Pat. Ser. No. 9,768,909), Co-Inventors w/ A.E. Willner: N. Ahmed, H. Huang, Y. Ren, M. Tur, M. J. Willner, Y. Yan and Y. Yue (Sept. 19, 2017)
33. Title: Adaptive Optics Based Simultaneous Turbulence Compensation of Multiple Orbital Angular Momentum Beams (U.S. Pat. Ser. No. 9,780,872), Co-Inventors w/ A.E. Willner: H. Huang, Y. Ren and G. Xie (Oct. 3, 2017)
34. Title: Phase-Sensitive Regeneration without a Phase-Locked Loop using Brillouin Amplification (U.S. Pat. Ser. No. 10,270,536), Co-Inventors w/ A.E. Willner: A. Almainan, Y. Cao, and M. Ziyadi (Apr. 23, 2019)
35. Title: Systems and Techniques for Communication using Multiple-Input-Multiple-Output Processing of Orbital Angular Momentum Modes (U.S. Pat. Ser. No. 10,291,300), Co-Inventors w/ A.E. Willner: Y. Ren, and L. Li (May 14, 2019)
36. Title: Tunable Optical Channel Slicing and Stitching to Enable Dynamic Bandwidth Allocation (U.S. Pat. Ser. No. 10,277,326), Co-inventor: Y. Cao (April 30, 2019)
37. Title: Systems and Techniques for Communication Using Combined Orbital Angular Momentum and Multiple-Input-Multiple-Output Processing (U.S. Pat. Ser. No. 10,411,811), Co-Inventors w/ A.E. Willner: Y. Ren, L. Li, G. Xie, Y. Cao, Z. Wang, C. Liu, and A. J. Willner (Sept. 10, 2019)
38. Title: Data Encoding and Channel Hopping Using Orbital Angular Momentum Modes (U.S. Pat. Ser. No. 10,750,257), Co-Inventors w/ A.E. Willner: Y. Ren, L. Li, A. J. Willner, and G. Xie (August 18, 2020)
39. Title: System and Method for Extending Path Length of a Wave Signal Using Angle Multiplexing (U.S. Pat. Ser. No. 10,789,009), Co-Inventors w/ A.E. Willner: P. F. McManamon, D. Damaghi, O. Harlev, A. Vedadi-Comte, C. R. Palanzo, and R. J. Howard (Sept. 29, 2020)
40. Title: Data in Motion Storage System and Method (U.S. Pat. Ser. No. 10,812,880), Co-Inventors w/ A.E. Willner: D. Damaghi, O. Harlev, A. Litvin, N. Barak, P. F. Mcmanamon, A. Mcguffin (Oct. 20, 2020)
41. Title: Spatial Light Structuring Using a Combination of Multiple Orthogonal Orbital Angular Momentum Beams with Complex Coefficients (U.S. Pat. Ser. No. 10,914,959), Co-Inventors w/ A.E. Willner: L. Li, C. Liu, Y. Ren, G. Xie, and Z. Zhao (Feb. 9, 2021)
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1. Alan E. Willner, “Advances in Utilizing OAM Multiplexing for Communication Systems,” **Invited Presentation, International Conference on Optical Angular Momentum (ICOAM)**, Tampere, Finland, June 2022.
2. A.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, 2021.

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3. Alan E. Willner, “Optical Communications: Innovations and Applications Abound,” **Plenary Talk, APS/IEEE/OSA Conference on Lasers and Electro-Optics (CLEO)**, San Jose, CA, May 2021 (Optical Society of America, Washington, D.C., 2021).
4. 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.
5. Alan E. Willner, “Dynamic Spatiotemporal Beams that Combine Two Independent and Controllable Orbital-Angular-Momenta Using Multiple Optical-Frequency-Comb Lines,” **Invited Presentation, SPIE Photonics West**, San Francisco, CA, March 2021.
6. 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.
7. Alan E. Willner, “High-Capacity Optical Communications Using Multiple Orbital-Angular-Momentum Beams,” **Plenary Talk, Global Summit and Expo on Laser, Optics and Photonics (GSELOP)**, Paris, France, Aug. 2021.
8. 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.
9. 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.
10. 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.
11. 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.
12. 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).
13. 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.

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14. Ahmad Fallahpour, Fatemeh Alishahi, Kaiheng Zou, Yinwen Cao, Ahmed Almainan, Arne Kordts, Maxim Karpov, Martin Hubert Peter Pfeiffer, Karapet Manukyan, Huibin Zhou, Peicheng Liao, Cong Liu, Moshe Tur, Tobias J. Kippenberg, and Alan E. Willner, "Demonstration of Tunable Optical Aggregation of QPSK to 16QAM over Optically Generated Nyquist Pulse Trains Using Nonlinear Wave Mixing and a Kerr Frequency Comb," **Invited Paper, IEEE/OSA Journal of Lightwave Technology**, vol. **32**, no. 2, pp. 359-365, 2019.
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16. 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.
17. 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).
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19. 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.
20. 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.
21. 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.
22. 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.
23. 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.
24. 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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25. 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.
26. 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).
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40. 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).
41. Alan E. Willner, "Free-Space and Underwater Optical Communications using Orbital-Angular-Momentum Multiplexing," **Invited Presentation, Society of Photo-Instrumentation Engineers (SPIE) Photonics North 2018**, paper **OP-COMM-4-32-4**, June 2018, Montreal, Canada (SPIE, Bellingham, Wash., 2018).
42. Kai Pang, Haoqian Song, Zhe Zhao, Runzhou Zhang, Hao Song, Guodong Xie, Long Li, Cong Liu, Jing Du, Andreas F. Molisch, Moshe Tur, Alan E Willner, "Experimental Demonstration of 400-Gbit/s Free-Space Mode-Division-Multiplexing by Varying Both Indices when using Four Laguerre-Gaussian Modes or Four Hermite-Gaussian Modes," **APS/IEEE/OSA Conference on Lasers and Electro-Optics (CLEO)**, paper **SM3C.4**, San Jose, CA, May 2018 (OSA, Wash., D.C., 2018).

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43. Alan E. Willner, "Vector-Mode Multiplexing Brings an Additional Domain for Capacity Growth in Optical Fibers," **Invited Paper, Light Science & Applications**, vol. **7**, pp. 18002, 2018.
44. Alan E. Willner, "Advances in Optical Delay Technologies for Signal Processing," **Invited Paper, Society of Photo-Instrumentation Engineers (SPIE) Photonics West, Steep Dispersion Engineering and Opto-Atomic Precision Metrology XI**, paper 10548-19, San Francisco, CA, Jan. 2018 (SPIE, Bellingham, Wash., 2018).
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46. Shuhui Li, Shi Chen, Alan E. Willner, Chunqing Gao, and Jian Wang, "Atmospheric Turbulence Compensation in Orbital Angular Momentum Communications: Advances and Perspectives," **Invited Paper, Optics Communications**, vol. **408**, pp. 68-81, 2018.
47. Alan E Willner, Zhe Zhao, Yongxiong Ren, Long Li, Guodong Xie, Haoqian Song, Cong Liu, Runzhou Zhang, Changjing Bao and Kai Pang, "Underwater Optical Communications Using Orbital Angular Momentum-based Spatial Division Multiplexing," **Invited Paper, Optics Communications**, vol. **408**, pp. 21-25, 2018.
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50. 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.
51. Yongxiong Ren, Cong Liu, Kai Pang, Jiapeng Zhao, Yinwen Cao, Guodong Xie, Long Li, Zhe Zhao, Zhe Wang, Moshe Tur, Robert Boyd, Alan Willner, "Experimental Demonstration of an Orbital-Angular-Momentum Encoded Quantum Communication Link Co-propagating with a Classical Channel," **Invited Paper, APS/IEEE/OSA Conference on Lasers and Electro-Optics (CLEO)**, paper SW4I, San Jose, CA, May 2017 (Optical Society of America, Wash., D.C., 2017).
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52. 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).
53. 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.
54. 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.
55. Alan E. Willner, "High-Capacity Communications using Multiplexing of Multiple Orbital-Angular-Momentum Beams," **Keynote Presentation, Society of Photo-Instrumentation Engineers (SPIE)**

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56. 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).
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60. 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.
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62. Alan E. Willner, Guodong Xie, Long Li, Yongxiong Ren, Yan Yan, Nisar Ahmed, Zhe Zhao, Zhe Wang, Cong Liu, Asher Willner, Nima Ashrafi, Solyman Ashrafi, Moshe Tur, and Andreas Molisch, "Design Challenges and Guidelines for Free-Space Optical Communication Links using Orbital-Angular-Momentum Multiplexing of Multiple Beams," **Invited Paper, Journal of Optics**, vol **18**, no. 7, pp. 074014, 2016.

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65. 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.
66. 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).
67. 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).
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73. Alan E. Willner, "Free-Space Communications using Orbital-Angular-Momentum Multiplexing of Multiple Beams," **Invited Paper, IEEE Photonics Society Summer Topical Meeting**, paper MC3.1, Newport Beach, California, July 2016 (IEEE, Piscataway, NJ, 2016).
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75. 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.
76. 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.
77. 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.

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79. 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).
80. 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.
81. Alan E. Willner, "The National Photonics Initiative and Integrated Photonics," **Invited Presentation, New York Photonics Annual Meeting**, Rochester, NY, Sept. 2015.
82. Alan E. Willner, "Optics and Photonics; Essential Technologies for our World", **Plenary Presentation, New Mexico International Year of Light Event**, Albuquerque, NM, Sept. 2015.
83. 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).
84. 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).
85. 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.
86. Alan E. Willner, "High-Capacity Millimeter-Wave Communications using Orbital-Angular-Momentum Multiplexing," **Invited Presentation, URO 5G Seminar Series**, Webcast, June 2015.
87. 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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 91. 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.
 92. 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.
 93. 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).
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 97. Martin P.J. Lavery, Giovanni Milione, Thien An Nguyen, Hao Huang, Guodong Xie, Dan A. Nolan, Robert R. Alfano, and Alan E. Willner, "Demonstration of Vector Mode Multiplexing and Demultiplexing in a 160 Gbit/s Free-space link," **Invited Paper, European Conference on Optical Communications (ECOC)**, paper We.3.6.1, Cannes, France, Sept. 2014.
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102. Alan E. Willner, "Exciting Prospects for Optical Signal Processing," **Plenary Presentation, Seventh International Photonics and Optoelectronics Meetings (POEM 2014)**, Wuhan, China, June 2014.
103. 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.
104. 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 Communications using 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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107. Alan E. Willner, Salman Khaleghi, Mohammad Reza Chitgarha, and Omer Faruk Yilmaz, "All-Optical Signal Processing," **Invited Paper, IEEE/OSA J. Lightwave Technol.**, vol. 32, no. 4, pp. 660-680, 2014.
108. 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).
109. 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).
110. 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).
111. Alan E. Willner, "Innovations Continue to Make the Future of Optical Communications Exciting, " **Plenary Presentation, 19th Opto-Electronics and Communications Conference (OECC)**, Melbourne, Australia, July 2014.
112. 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.
113. Alan E. Willner, "Exciting Prospects for Optical Signal Processing," **Invited Seminar, KAIST**, Daejeon, Korea, Feb. 2014.

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114. 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).
115. 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.
116. Alan E. Willner, "Technologies in Lightwave Communications: Innovations (and their Needs) Abound," **Plenary Presentation, Asia Communications and Photonics Conference 2013**, paper AW1A.1, Beijing, China, Nov. 2013 (Optical Society of America, Washington, D.C., 2013).
117. Alan E. Willner, "Tbit/s Optical Communications using Multiplexing of Multiple Orbital-Angular-Momentum Modes," **Invited Seminar, IEEE Computer Society—Coastal Los Angeles Chapter**, Loyola Marymount University, Nov. 2013 (IEEE, Piscataway, NJ, 2014).
118. Alan E. Willner, "National Photonics Initiative," **Invited Presentation, Board on Physics and Astronomy (BPA) Fall Meeting, National Research Council**, Irvine, Nov. 2013.
119. 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).
120. Alan E. Willner, "Tbit/s Optical Communications using Multiplexing of Multiple Orbital-Angular-Momentum Modes," **Invited Seminar**, Tianjin University, Nov. 2013.
121. 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).
122. 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).
123. 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.
124. Alan E. Willner, "Multiplexing Information-Carrying Orthogonal Beams using Orbital Angular Momentum States," **Invited Paper, Frontiers in Optics Conference 2013 (FiO)**, paper FM3F.1, Oct. 2013, Orlando, FL (Optical Society of America, Wash., D.C., 2013).
125. Morteza Ziyadi, Mohammad Reza Chitgarha, Salman Khaleghi, Amirhossein Mohajerin-Ariaei, Ahmed Almainan, Joe Touch, Moshe Tur, Carsten Langrock, Martin M. Fejer, and Alan E. Willner, "Tunable Optical Correlator using an Optical Frequency Comb and a Nonlinear Multiplexer," **Invited Paper, Optics Express**, Special Issue on European Conference on Optical Communications, vol. **22**, no. 1, pp. 84-89, 2014.
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128. Alan E. Willner, "Tbit/s Optical Communications using Orbital Angular Momentum," **Invited Paper, 18th Microoptics Conference (MOC'13)**, Tokyo, Japan, Oct. 2013.
129. 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 using Orbital 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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130. Alan E. Willner, "National Academies Study on 'Optics and Photonics: Essential Technologies for Our Nation,'" **Invited Paper, IEEE Avionics, Fiber-Optics and Photonics Conference (AVFOP)**, San Diego, CA, May 2013 (IEEE, Piscataway, NJ, 2013).
131. Alan E. Willner, "Optics and Photonics: Essential Technologies for Our Nation," **Invited Presentation, Division Committee on Engineering and Physical Sciences (DEPS) Spring Meeting, National Research Council**, Washington, March 2013.
132. 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.
133. Robert W. Boyd, Mehul Malik, Mohammad Mirohosseini, Colin O'Sullivan, Brandon Rodenburg, Zhimin Shi, Daniel J. Gauthier, Miles J. Padgett, Martin P.J. Lavery, Stephen M. Barnett, Alan Willner, and Yongxiong Ren, "Orbital-Angular-Momentum Encoding for Free Space QKD," **Invited Paper, The 43rd Winter Colloquium on the Physics of Quantum Electronics (PQE)**, Snowbird, UT, Jan. 2013.
134. 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).
135. Alan E. Willner, "Reconfigurable Optical Networking Functions using Orbital Angular Momentum," **Invited Paper, Society of Photo-Instrumentation Engineers (SPIE) Photonics West**, paper 8647-4, Feb. 2013, San Francisco, CA (SPIE, Bellingham, Wash., 2013).
136. Alan E. Willner, "Optical Techniques for Generating and Demultiplexing Higher-Order Modulation Formats," **Invited Paper, Society of Photo-Instrumentation Engineers (SPIE) Photonics West**, paper 8646-21, Feb. 2013, San Francisco, CA (SPIE, Bellingham, Wash., 2013).
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148. Alan E. Willner, Yang Yue, Hao Huang, and Lin Zhang, "Signal Propagation Effects in HCG Hollow-Core Waveguides," **Invited Paper, Society of Photo-Instrumentation Engineers (SPIE) Photonics West**, paper 8270-15, Jan. 2012, San Francisco, CA (SPIE, Bellingham, Wash., 2012).
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153. A.E. Willner, "Nonlinear Optics in Optical Fiber Communications: *For Worse and For Better*," **Invited Presentation, *Quantum Electronics Seminar***, Stanford University, Oct. 31, 2011.
154. A.E. Wilner, "Technologies in Lightwave: From (Cavity) Modes to (WDM) Nodes," **Plenary Presentation, 2011 International Symposium on Information Photonics & Optical Communications**, July 2011, Chengdu, China.
155. A.E. Willner, "All-Optical Signal Processing using Optical Nonlinearities," **Invited Presentation, 5th International Symposium on Ultrafast Photonic Technologies**, at HHI in Berlin, Sept. 2011.
156. A.E. Willner, S.R. Nuccio, and O. Yilmaz, "Recent Advances in Tunable Optical Delays and Their Applications," **Invited Paper, Society of Photo-Instrumentation Engineers (SPIE) Photonics West**, Conference 7949, paper 7949-7, Jan. 2011, San Jose, CA (SPIE, Bellingham, Wash., 2011).
157. Lin Zhang, Yang Yue, and Alan E. Willner, "Micro-Resonator Devices for Optical Broadband Access Application," **Invited Paper, Society of Photo-Instrumentation Engineers (SPIE) Photonics West**, Broadband Access Communication Technologies V Conference 7959, paper 7959-2, Jan. 2011, San Jose, CA (SPIE, Bellingham, Wash., 2011).
158. A.E. Willner, "All-Optical Signal Processing using Optical Nonlinearities," **Invited Seminar, Bar Ilan University**, Israel, July 26, 2011.
159. A.E. Willner, L. Zhang, and Y. Yue, "Tailoring of Dispersion and Nonlinear Properties of Integrated Silicon Waveguides for Signal Processing Applications," **Invited Paper, IOP Semiconductor Science and Technology**, Special Issue Honoring Zhores Alferov: From Heterostructures to Nanostructures, vol. **26**, no. 1, paper 014044, Jan. 2011.
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162. A. Bogoni, L. Potì, A. Willner, P. Ghelfi, C. Porzi, M. Scaffardi, G. Meloni, G. Berrettini, F. Fresi, E. Lazzeri, and X. Wu, "Overview on Optical Logic Elementary Circuits," **Invited Paper, Journal of IET Circuits, Devices & Systems**, vol. 5, pp. 76-83, 2011.
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165. Alan E. Willner, Lin Zhang, Yang Yue, and Xiaoxia Wu, "Integrated Nano-Structured Silicon Waveguides and Devices for High-Speed Optical Communications," **Invited Paper, Chinese Optics Letters**, Special Issue on Science and Technology for High-Speed Optical Communications, vol. **8**, no. 9, pp. 909-917, 2010.

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168. A.E. Willner, "U.S. Leadership Role in R&D: A Researcher's Perspective," **Invited Paper, Optoelectronics Industry Development Association (OIDA) Annual Forum**, Arlington, VA, Nov. 2010.
169. A.E. Willner, "Towards Robust and Reconfigurable Optical Communication Systems," **Invited Seminar, CREOL, Univ. of Central Florida**, IEEE Photonics Society Student Local Chapter, Orlando, June 2010.
170. A.E. Willner, "Towards Robust and Reconfigurable Optical Communication Systems," **Invited Seminar, Stanford University, OSA/SPIE Student Chapter Seminar Series**, May 2010.
171. Antonella Bogoni, Xiaoxia Wu, Jian Wang, Alan E. Willner, "Ultra-Fast All Optical Signal Processing and Switching Based on PPLN Waveguides," **Invited Paper, OSA Topical Meeting on Photonics in Switching**, paper PWA1, Monterey, CA, July (Optical Society of America, Wash., D.C., 2010).
172. A.E. Willner, "A Researcher's Perspective to the Energy Issue," **Invited Presentation, OSA Topical Meeting on Photonics in Switching**, Workshop 1: Energy Efficient Networking and Systems, Monterey, CA, July (Optical Society of America, Wash., D.C., 2010).
173. A.E. Willner, "Efficient Communications for Access and Interconnects," **Invited Presentation, Annual Danish-Californian Workshop on Photonic Technologies for Access and Interconnects**, Stanford University, CA, Jan.2010.
174. Zhongqi Pan, Changyuan Yu, and Alan E. Willner, "Optical Performance Monitoring for the Next Generation Optical Communication Networks," **Invited Paper, Journal of Optical Fiber Technology**, vol. 16, pp. 20-45, 2010.
175. A.E. Willner, "Writing Your CV and Cover Letter," **Invited Seminar, USC Center for Excellence in Teaching (CET) 2010 Academic Careers Week Program**, Oct. 2010.
176. A.E. Willner, "A Broader-Bandwidth Optical Network," **Keynote Paper, 14th Opto-Electronics and Communications Conference (OECC)**, Hong Kong, July 13, 2009.
177. Alan E. Willner, "Optical Communications: Innovations (and Their Needs) Abound," **Plenary Presentation, IPOS Launch and Symposium: Faster, Further, Smarter**, Institute of Photonics and Optical Science, Univ. of Sydney, April 2009.
178. Alan E. Willner, "Towards High-Performance and Reconfigurable Optical Communication Networks," **Invited Presentation, Distinguished Lecturer Series**, Dipartimento di Ingegneria dell'Informazione, Universita' di Padova, Italy, 2009.
179. M. Scaffardi, P Ghelfi, C. Porzi, G. Meloni, G. Berrettini, A. Malacarne, F. Fresi, E. Lazzeri, J. Wang, X. Wu, I. Fazal, A. Willner, L. Potì, A. Bogoni, "Photonic Digital Processing for Enabling Next Generation Optical," **Invited Paper, IEEE Photonics in Switching Meeting**, paper WeI2-5, Pisa, Italy, Sept. 2009 (IEEE, Piscataway, NJ, 2009).

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180. Alan E. Willner, "Advanced Optical Communication Functions using Nanophotonic Devices," **Invited Paper, International Nano-Optoelectronic Workshop (iNOW)** (sponsored by U.S. and German NSF), Stockholm, Aug. 2009.
181. A.E. Willner, "Enhancing Optical Communication Systems by using Advanced OE Devices," **Invited Paper, The 12th Meeting on Optical Engineering and Science in Israel (2nd OASIS)**, Association of Engineers and Architects in Israel, Tel Aviv, March 2009.
182. A.E. Willner, "Optical Communications: Innovations (and Their Needs) Abound," **Invited Seminar, W.V.T. Rusch Engineering Honors Colloquium**, USC Viterbi School of Engineering, Feb. 2009.
183. Alan E. Willner, "Advanced Optical Signal Processing Functions using Integrated Photonics," **Invited Paper, Center for High Technology Materials (CHTM) Silver Event**, Univ. of New Mexico, Aug. 2009.
184. 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.
185. A.E. Willner, "Achieving Tunable Delays using Wavelength Conversion," **Invited Paper, Society of Photo-Instrumentation Engineers (SPIE) Photonics West, Conference on Advances in Slow and Fast Light II (OPTO OE116)**, paper 7226-11, Jan. 2009, San Jose, CA (SPIE, Bellingham, Wash., 2009).
186. Alan E. Willner, "Optical Communications: Innovations (and their Needs) Abound," **Invited Presentation, Colloquium Lecture Series**, College of Optical Sciences, Univ. of Arizona, March 5, 2009.
187. Alan Willner, "Negotiating an Academic Job Offer," **Invited Seminar, USC Center for Excellence in Teaching (CET) Seminar**, Oct. 2009.
188. A.E. Willner, B. Zhang, L. Zhang, L.-S. Yan, and I. Fazal, "Optical Signal Processing using Tunable Delay Elements Based on Slow Light," **Invited Paper, IEEE Journal of Selected Topics in Quantum Electronics**, Special Issue on Nonlinear Optical Signal Processing, vol. **14**, pp. 691-705, 2008.
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190. A.E. Willner, "Stable and Reconfigurable High-Capacity Optical Networks," **Plenary Paper, IEEE Photonics Global Singapore (IPGC 2008)**, 7th Int'l Conference on Optical Communications & Networks (ICOON), Singapore, Dec. 2008.
191. Alan E. Willner, "Towards Stable and Reconfigurable High-Capacity Optical Networks," **Plenary Paper, International Conference on Optics and Photonics in Taiwan 2008**, paper Fri-AP-01, Taipei, Taiwan, Dec. 2008.
192. A.E. Willner, "Targeted Optical Signal Processing for High-Performance Optical Networking," **Plenary Paper, CS/IEICE/IEEE Conference on Photonics in Switching**, Saporro, Japan, Aug. 2008.
193. A.E. Willner, "Future Broader-Bandwidth Optical Communication Systems," **Plenary Paper, IEEE Lasers and Electro-Optics Society Summer Topical Meeting on Mitigating Channel Degrading Effects**, Proceedings, Acapulco, Mexico, July 21-23, 2008 (IEEE, Piscataway, NJ, 2008).
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196. Alan E. Willner, "Towards High-Performance and Reconfigurable Optical Communication Networks," **Invited Seminar, IEEE ComSoc and LEOS Baltimore Chapter Seminar Series**, Oct. 2008.
197. Alan E. Willner, "Optical Performance Monitoring for Reconfigurable Optical Networks," **International Nano-Optoelectronic Workshop (iNOW)**, Japan, Aug. 2008.
198. 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.
199. A.E. Willner, "High-Performance Gbit/s Data Transmission Through Slow Light Elements," **Invited Paper, Optical Society of America (OSA) Topical Meeting on Slow and Fast Light**, paper SMC1, Boston, July 2008 (OSA, D.C., 2008).
200. Alan E. Willner and Lin Zhang, "Physical Layer Challenges of On-Chip Optical Interconnects," **Invited Presentation, HP Photonic Interconnect Forum**, Hewlett-Packard Laboratories, Palo Alto, CA, May 2008.
201. A.E. Willner, "Value of Societies to Your Career: Plant the Flag to be a Leader," **Invited Presentation, OSA Student Activities Workshop, Conference on Lasers and Electro-Optics (CLEO)**, San Jose, CA, May 2008 (Optical Society of America, Wash., D.C., 2008).
202. A.E. Willner and B. Zhang, "Tunable Delay Lines using Slow Light for Gbit/s Data Signals," **Invited Paper, Society of Photo-Instrumentation Engineers (SPIE) Photonics West, Conference on Advances in Slow and Fast Light (OE21)**, paper 6904-09, Jan. 2008, San Jose, CA (SPIE, Bellingham, Wash., 2008).
203. A.E. Willner, "All-Optical Signal Processing in Next-Generation Communication Systems" **Invited Presentation, Workshop OMD on All-Optical Signal Processing and Conditioning, Conference on Optical Fiber Communications (OFC)**, San Diego, CA, Feb. 2008.
204. A.E. Willner, "Specialty Fibers to Realize Signal Processing Functions," **Invited Presentation, Workshop OSuA on "Is Optical Transmission Fiber a Commodity or is Further Innovation Required?," Conference on Optical Fiber Communications (OFC)**, San Diego, CA, Feb. 2008.
205. A.E. Willner, "Systems Requirements for Signal Processing using Parametric Processes," **Invited Presentation, Workshop OMD on All-Optical Signal Processing and Conditioning, Conference on Optical Fiber Communications (OFC)**, San Diego, CA, Feb. 2008.
206. Alan E. Willner, "Optical Networking Perspectives vs. Optical Technologies Reality," **Keynote Presentation, ONDM Conference COST 291 Workshop**, International Federation of Information Processing (IFIP), Athens, Greece, May 2007.
207. A.E. Willner, "Opportunities & Challenges in Optical Networking," **Plenary Presentation, 9th International Conference on Transparent Optical Networks (ICTON)**, Rome, Italy, July 2007.
208. A.E. Willner, "Robust and Reconfigurable Optical Communication Systems," **Plenary Presentation, Workshop on Optical Communications, Advanced Communications Center**, Tel Aviv University, Dec. 2007.
209. A.E. Willner, "Stable and Reconfigurable Optical Networks," **Invited Paper, IEEE Lasers and Electro-Optics Society Annual Meeting 2007**, paper WFF1, Orlando, Oct. (IEEE, Piscataway, NJ, 2007).

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212. A.E. Willner, "The Resume Process: Not it, but about it," **Invited Presentation, USC Academic Careers Week**, Oct. 2007.
213. 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.
214. 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.
215. 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).
216. 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.
217. Alan E. Willner, "Monitoring and Channel Measurements to Enable Stable, High-Capacity Optical Networks," **Invited Seminar**, NIST, Boulder, Colorado, Feb. 2007.
218. 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).
219. Alan E. Willner, "Physical-Layer Challenges in Stable, High-Capacity Optical Communication Networks," **Keynote Paper, Asia Optical Communications and Optoelectronics Exhibition (AOE)**, Shanghai, China, Oct. 2006.
220. A.E. Willner, "Optical Performance Monitoring for Robust Optical Networks," **Invited Seminar**, Dept. of Electrical Engineering, Univ. of Melbourne, Melbourne, Australia, Oct. 2006.
221. Alan E. Willner, "Photonic Integration for Smart and Robust Communication Systems," **Plenary Presentation**, MIT Center for Integrated Photonic Systems (CIPS) Annual Meeting, May 5, 2006.
222. Zhaoming Zhu, Andrew M.C. Dawes, Daniel Gauthier, Michael D. Stenner, Mark A. Neifeld, Ting Luo, Changyuan Yu, Lin Zhang, and Alan E. Willner, "Recent Advances in Stimulated Brillouin Scattering Slow Light," **Invited Paper, OSA Topical Meeting on Slow and Fast Light**, paper TuB1, July 2006, D.C. (OSA, D.C., 2006).
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228. Alan E. Willner, "Self-Managing Intelligent Optical Networks for Smarter, Tougher, and Cheaper Systems," **Invited Paper, Society of Photo-Instrumentation Engineers (SPIE) Newsroom**, Manuscript 743 (10.1117/2.1200603.0128), April 2006 (SPIE, Bellingham, Wash., 2006).
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232. A.E. Willner, "Future Highly-Efficient Optical Networks," **Invited Paper, Conference on Lasers and Electro-Optics (CLEO)**, paper CTuX3, pp. 1052-1054, Baltimore, MD, May 2005 (Optical Society of America, Wash., D.C., 2005).
233. Alan E. Willner, Louis C. Christen, John E. McGeehan, Yan Wang, Saurabh Kumar, and Irfan Fazal, "Physical Layer Routing in Free-Space Optical Networks," **Invited Paper, Newsletter of the IEEE Lasers and Electro-Optics Society**, Special Issue on Free Space Optical Communications, vol. **19**, no. 5, Oct. 2005 (IEEE/LEOS, Piscataway, New Jersey, 2005).
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237. A.E. Willner, "Transmission Challenges in 40-Gbit/s Networks," **Invited Paper, Optoelectronics Industry Development Association (OIDA) PTAP 40 Gbit/s Workshop**, Chicago, May 2005.
238. A.E. Willner, "FBG-Based Optical Correlators for Networking," **Invited Paper, Bragg Gratings, Poling & Photosensitivity/ 30th Australian Conference on Optical Fibre Technology (ACOFT/BGPP)**, Sydney, Australia, July 2005.
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243. A.E. Willner, "Communications Overview: A Converged, Robust Future in Communications," **Invited Paper, DARPA MTO Symposium on Photonics**, Session WE2, San Francisco, CA, Dec. 2004.
244. A.E. Willner, "Monitoring, Security & Routing in High-Capacity Optical Networks," **Invited Paper, Cisco Systems Optical Daze Symposium**, Dec. 2004
245. Z. Pan, A.E. Willner, C. Yu, and Y. Wang, "Applications of Highly Nonlinear Fiber in WDM Communications Systems," **Invited Paper, OSA/SPIE Optics in the Southeast**, paper D2, November 4-5, Charlotte, North Carolina, 2004.
246. A.E. Willner, "Monitoring and Emulation of Fiber-Based Dispersive Effects," **Invited Paper, IEEE Lightwave Technologies in Instrumentation & Measurement Conference**, paper LTIMC-28, Palisades, NY, Oct. 2004 (IEEE, Piscataway, NJ, 2004).
247. A.E. Willner, "Systems Applications for Slow Light Technologies," **Invited Paper, CRI (Charlotte Research Institute) Conference on Slow Light**, Univ. of North Carolina, Charlotte, NC, July 2004.
248. A.E. Willner, "High-Capacity Optical Systems and Networks," **Invited Presentation, Nerd Lunch Seminar Series**, Cisco Systems, San Jose, Jun 2004.
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253. Alan Willner and L.-S. Yan, "Performance Degradations and Monitoring in Optical Networks," **Invited Paper, Asia-Pacific Optical and Wireless Communications Conference**, paper 5282-39, Wuhan, China, Nov. 2003 (SPIE, Bellingham, WA, 2003)
254. Alan E. Willner, "Physical Layer Impairments and Solutions," **Invited Paper, Globecom**, Workshop on Optical Burst Switching, San Francisco, Dec. 2003 (IEEE, Piscataway, NJ, 2003)
255. Alan E. Willner, "Is Circuit Switching So Much Easier Than Packet Switching?," **Invited Paper**, Workshop on Optical Networking: Circuit or Packet Switching? – Where, When and How?, Workshop PS.We.Workshop1, **Photonics in Switching**, Versailles, France, Oct. 2003 (Optical Society of America, Wash., D.C., 2003).
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262. A.E. Willner, "Combating Channel-Degrading Effects in Multiple-Wavelength Optical Systems," **Invited Presentation, Nerd Lunch Seminar Series**, Cisco Systems, San Jose, July 2003.
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264. 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.
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