

Tristan J. Tayag

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EDUCATION:

Doctor of Philosophy in Electrical Engineering May 1991	University of Virginia Charlottesville, Virginia
Master of Science in Engineering May 1987	Johns Hopkins University Baltimore, Maryland
Bachelor of Science in Electrical Engineering (minor in German) May 1986	Johns Hopkins University Baltimore, Maryland

PROFESSIONAL POSITIONS:

Texas Christian University Fort Worth, Texas	Full Professor: Department of Engineering June 2011-present
	Associate Professor: Department of Engineering June 2002-May 2011
	Assistant Professor: Department of Engineering August 1997-May 2002
University of North Texas Health Science Center Fort Worth, Texas	Adjunct Clinical Associate Professor: Dept of Orthopaedic Surgery Texas College of Osteopathic Medicine August 2008-present
	Adjunct Associate Professor: Dept of Cell Biology & Genetics Graduate School of Biomedical Sciences August 2008-August 2011
United States Military Academy West Point, New York	ARL Visiting Scientist: EE&CS Department August 1996-June 1997
University of Maryland College Park, Maryland	Special Member of the Graduate Faculty 1997-1999
U.S. Army Research Laboratory Adelphi, Maryland	Electronics Engineer, GS-14: Optics Branch August 1991-July 1997
University of Oklahoma Norman, Oklahoma	Lecturer: Electrical Engineering/Computer Science Department Spring 1991
	Research Scientist: Electro-optics Laboratory September 1989-July 1991

University of Virginia
Charlottesville, Virginia

Research Assistant: Electro-optics Laboratory
January 1988-August 1989

Teaching Assistant: Electrical Engineering Department
Fall 1987

Johns Hopkins University
Applied Physics Laboratory
Laurel, Maryland

Associate Engineer: Electro-optical Systems Group
June 1986-August 1987

Technical Aide: Radar Signal Processing Group
Summer 1985

Westinghouse Electric Corp.
Baltimore, Maryland

Internship Program: Command and Control Division
Spring 1985

TEACHING EXPERIENCE:

Courses Taught at Texas Christian University:

ENGR 10042 Principles of Digital Logic
ENGR 20404 Network Analysis I (integrated lecture and lab)
ENGR 20413 Network Analysis II
ENGR 30503 Signals and Systems
ENGR 30543 Electromagnetics
ENGR 40484 Electromechanics (integrated lecture and lab)
ENGR 40544 Fiber Optic Communications (integrated lecture and lab)
ENGR 40754 Digital Signal Processing (integrated lecture and lab)
ENGR 40970 Computer Simulation of a Bioreactor (independent study)
ENGR 40970 Bioreactor Design (independent study)
ENGR 40970 Fluorescence Imaging (independent study)
ENGR 40970 Fiber Optic Interferometry (independent study)
ENGR 40970 Rotating Bioreactor Hydrodynamics (independent study)
ENGR 40970 Technology Entrepreneurship Seminar (seminar)

New Course Approved:

SCIE 20103 Technology Entrepreneurship – Study Abroad

Courses Taught at the United States Military Academy:

EE 381 Signals and Systems
EE 383 Electromagnetic Fields
EE 489 Photoemitters for Optical Communications Applications (independent study)

Course Taught at the University of Oklahoma:

ECE 3613 Electromagnetic Fields II

Course Taught at the University of Virginia:

ECE 2630 Introductory Circuit Analysis Lab (Teaching Assistant)

PUBLICATIONS:

Refereed Archival Journal Publications and Book Chapters:

1. T. J. Tayag, P. Kumar, A. Thomas, and R. S. Weis, "Fiber optic velocimeter for ballistic shock measurement," to be submitted to *Opt. Engineer*.
2. T. J. Tayag and R. C. Watson, "Digital demodulation of interferometric signals," book chapter in *Metrology*, Intech Publisher (in preparation).
3. P. B. Wright, V. Kosmopoulos, R. E. Cote, T. J. Tayag, and A. D. Nana, "FiberWire is superior to stainless steel for tension band fixation of transverse patella fractures," *Injury*, vol. 40, no. 11, pp. 1200-1203 (November 2009).
4. R. E. Bunata, V. Kosmopoulos, S. Simmons, T. J. Tayag, M. Roso, and H. Carlson, "Primary tendon sheath enlargement and reconstruction in zone 2: an in vitro biomechanical study on tendon gliding resistance," *J. Hand Surgery*, vol. 34A, pp. 1436-1443 (October 2009).
5. T. J. Tayag, E. S. Kolesar, B. D. Pitt, K. S. Hoon, J. Marchetti, and I. H. Jafri, "An optical fiber interferometer for measuring the *in situ* deflection characteristics of MEMS structures," *Opt. Engineer*, vol. 42, no. 1, pp. 105-111 (January 2003).
6. T. J. Tayag, "Quantum-noise-limited sensitivity of an interferometer using a phase generated carrier demodulation scheme," *Opt. Eng. Lett.*, vol. 41, no. 2, pp. 276-277 (February 2002).
7. T. J. Tayag, M. B. Steer, J. F. Harvey, A. B. Yakovlev, and J. Davis, "Spatial power splitting and combining based on the Talbot effect," *IEEE Microwave and Wireless Components Lett.*, vol. 12, no. 1, pp. 9-11 (January 2002).
8. D. M. Mackie, T. J. Tayag, and T. E. Batchman, "Polarization separation/combination based on self-imaging," *Opt. Engineer*, vol. 40, no. 10, pp. 2265-2272 (October 2001).
9. L. J. Harrison, T. J. Tayag, G. J. Simonis, M. Stead, G. W. Euliss, and R. P. Leavitt, "Monolithic integration of 1.3 μm Stark-ladder electroabsorption waveguide modulators with multimode interference splitters," *IEEE Photonics Technol. Lett.*, vol. 12, no. 6, pp. 657-659 (June 2000).
10. S. Kareenahalli, M. Dagenais, D. Stone, and T. Tayag, "Experimental confirmation of phase relationships of multimode interference splitters using a shearing type near-field Sagnac interferometer," *IEEE Photon. Technol. Lett.*, vol. 9, no. 7, pp. 937-939 (July 1997).
11. T. J. Tayag and G. W. Bryant, "A guide/antiguide structure for implementing self-imaging waveguide beamsplitters," in *Guided-Wave Optoelectronics: Device Characterization, Analysis, and Design*, T. Tamir, G. Griffel, and H. L. Bertoni, eds., Plenum Press, New York, NY (1995).
12. T. J. Tayag, D. M. Mackie, and G. W. Bryant, "A manufacturable technique for implementing low-loss self-imaging waveguide beamsplitters," *IEEE Photon. Technol. Lett.*, vol. 7, no. 8, pp. 896-898 (August 1995).
13. E. J. Twyford, T. J. Tayag, N. M. Jokerst, and P. A. Kohl, "A pixellated grating array using photoelectrochemical etching on a GaAs waveguide," *IEEE Photon. Technol. Lett.*, vol. 7, no. 7, pp. 766-768 (July 1995).

14. T. J. Tayag, T. E. Batchman, and J. J. Sluss, Jr., "Electric-field-dependence of the photocarrier hopping mobility in bismuth silicon oxide," *J. Appl. Phys.*, vol. 76, no. 2, pp. 967-973 (July 1994).
15. J. J. Sluss, Jr., T. J. Tayag, and T. E. Batchman, "Effects of impurities on photocarrier mobility in $\text{Bi}_{12}\text{SiO}_{20}$," *IEE Proceed. J.*, vol. 139, no. 5, pp. 357-360 (October 1992).
16. T. J. Tayag, T. E. Batchman, and J. J. Sluss, Jr., "Direct measurement of the electrogyratory effect in bismuth silicon oxide," *Appl. Opt.*, vol. 31, no. 5, pp. 625-629 (February 1992).
17. M. E. Thomas and T. J. Tayag, "Refractive index of He, SF_6 , and CO_2 at $0.6328 \mu\text{m}$ as a function of temperature and pressure," *Appl. Opt.*, vol. 27, no. 16, pp. 3317-3318 (August 1988).

Conference Proceedings:

1. T. J. Tayag, S. Dan Dimitrijevič, L. C. del Gallego, and P. Kumar, "Rotating Wall Vessel Designed for Fluorescent Imaging," in *Optical Interactions with Tissue and Cells XXII*, edited by E. Duco Jansen and R. J. Thomas, *Proceed. of SPIE*, vol. 7897, CID 789718 (2011).
2. T. J. Tayag and B. Bachim, "Simulation of an Interferometric Computed Tomography System for Intraocular Lenses," in *Interferometry XV: Applications*, edited by C. Furlong, C. Gorecki, and E. L. Novak, *Proceed. of SPIE*, vol. 7791, CID 77910K-3 (2010).
3. T. J. Tayag, T. Htun, and E. S. Kolesar, "Integration of a low-cost fiber interferometer with a MEMS probe station," in *Interferometry XV: Applications*, edited by C. Furlong, C. Gorecki, and E. L. Novak, *Proceed. of SPIE*, vol. 7791, CID 77910R-1 (2010).
4. P. Kumar, A. Thomas, R. S. Weis, and T. J. Tayag, "Digital processing of an interferometric velocimeter for ballistic shock measurement" in *Optical Inspection and Metrology for Non-Optics Industries*, edited by P. S. Huang, T. Yoshizawa, and K. G. Harding, *Proceed. of SPIE*, vol. 7432, CID 74320K (2009).
5. P. B. Wright, V. Kosmopoulos, R. E. Cote', T. J. Tayag, and A. D. Nana, "FiberWire is superior to stainless steel for tension band fixation of transverse patella fractures," *Orthopaedic Research Society 55th Annual Meeting*, Las Vegas, NV (February 2009).
6. S. Simmons, V. Kosmopoulos, M. Roso, H. Carlson, R. E. Cote', T. J. Tayag, and R. E. Bunata, "Enlarging and reconstructing the flexor tendon sheath reduces gliding resistance," *Orthopaedic Research Society 55th Annual Meeting*, Las Vegas, NV (February 2009).
7. R. A. Weber, T. J. Tayag, and L. J. Shannon, "Digital demodulation algorithm for the interferometric characterization of RF MEMS structures," in *Proceedings of the SPIE: Interferometry XII – Techniques and Analysis*, vol. 5531, pp. 315-322, Denver, CO (August 2004).
8. B. D. Pitt, T. J. Tayag, and M. L. Nelson, "Digital demodulation of an interferometer for the characterization of vibrating microstructures," in *Proceed. of the SPIE: Advanced Semiconductor Characterization Tech. for Optics, Semiconductors, and Nanotechnologies*, vol. 5188, pp. 61-70, San Diego, CA (August 2003).
9. B. D. Pitt, T. J. Tayag, and M. L. Nelson, "An algorithm for the digital demodulation of an interferometer," *ASEE Gulf-Southwest Annual Conference*, Arlington, TX (March 2003).
Note: Awarded 2nd Place in the Student Paper Contest.
10. J. Kern, S. D. Dimitrijevič, T. J. Tayag, B. D. Pitt, T. H. Summers, and C. G. Davis, "An optical system to characterize the gross contractile response of a tissue-equivalent collagen matrix," in *Proceedings of the SPIE: Optical Technologies to Solve Problems in Tissue Engineering*, vol. 4961, pp. 244-249, San Jose, CA

(January 2003).

11. D. M. Mackie and T. J. Tayag, "Form birefringence in waveguide devices," in *Proceedings of the Integrated Photonics Research Topical Meeting*, Vancouver, Canada (July 2002).
12. T. J. Tayag and C. A. Belk, "The application of digital signal processing to stabilize an interferometer at quadrature," in *Proceedings of the 10th International Conference on Electronics, Communications, and Computers: ConieComp 2000*, vol. 10, pp. 75-78 (February 2000).
13. C. A. Belk and T. J. Tayag, "Digital demodulation of a fractional fringe interferometer," *DSPS Fest '99*, www.ti.com/sc/dspsfest, Houston, TX (August 1999).
14. T. J. Tayag, L. J. Harrison, G. J. Simonis, M. Stead, G. W. Euliss, and R. P. Leavitt, "Monolithic integration of multimode interference splitters with electroabsorption waveguide modulators at 1.3 μm ," in *Proceed. of the LEOS Annual Meeting*, Orlando, FL (December 1998).
15. F. A. Varela and T. J. Tayag, "Talbot effect devices for optical communications," in *Proceed. of the Nat'l Conf. on Undergrad. Research '98*, vol. III, pp. 1019-1022, Salisbury, MD (April 1998).
16. S. Kareenahalli, M. Dagenais, D. Stone, and T. Tayag, "Experimental confirmation of phase relationships of multimode interference splitters using a shearing type near-field Sagnac interferometer," in *Proceed. of the LEOS Annual Meeting*, San Francisco, CA, (November 1997).
17. T. J. Tayag, A. H. Sayles, and P. M. Ryan, "Army Research Laboratory Sponsorship of Senior Design Projects at West Point," in *Proceed. of the ASEE Zone I Meeting – Engineering Education: Evolution and Revolution*, West Point, NY (April 1997).
18. D. Kuykendall, C. L. Reitsma, T. J. Tayag, D. M. Mackie, L. J. Harrison, G. W. Euliss, G. F. McLane, and R. P. Leavitt, "WDM coupler based on Talbot self-imaging in planar optical waveguides," in *Proceed. of the Nat'l Conf. on Undergrad. Research '97*, vol. III, pp. 1215-1219, Austin, TX (April 1997).
19. M. H. Smith, E. A. Sornsin, T. J. Tayag, and R. A. Chipman, "Polarization characterization of self-imaging GaAs/AlGaAs waveguide beamsplitters using Mueller matrix imaging polarimetry," in *Proceed. of the Photonics West Conference – Optoelectronics '97*, San Jose, CA (February 1997).
20. T. J. Tayag, D. M. Mackie, G. W. Euliss, and L. J. Harrison, "An integrated optics beamsplitter with applications to communications," in *Proceed. of the ARL 1997 Sensors and Electron Devices Symposium*, Adelphi, MD (January 1997).
21. T. J. Tayag and D. M. Mackie, "Manufacturable self-imaging waveguide beamsplitters," *NASA Tech Briefs*, vol. 22, no. 8, pp. 6a-8a (August 1996).
22. T. J. Tayag, D. M. Mackie, and G. W. Euliss, "Talbot effect waveguide splitters for tactical wireless communications," in *Proceed. of the 20th Army Science Conference*, vol. 1, pp. 227-231, Norfolk VA (June 1996).
23. D. M. Mackie and T. J. Tayag, "Modeling of self-imaging integrated optical power splitters," in *Proceed. of DoD Photonics '96*, pp. 59-64, McLean, VA (March 1996).
24. G. W. Euliss and T. J. Tayag, "A time-integrating optical delay-line correlator with application to optical CDMA networks," in *Proceed. of DoD Photonics '96*, pp. 1125-129, McLean, VA (March 1996).
25. E. J. Twyford, T. J. Tayag, N. M. Jokerst, and P. A. Kohl, "Surface relief grating array on GaAs

waveguides for pixellated vertical outcoupling,” in *Optical Computing*, OSA Technical Digest Series, vol. 10, Optical Society of America, Washington DC (1995).

26. D. M. Mackie, T. J. Tayag, and G. W. Bryant, “Integrated optical power splitters based on symmetric mode mixing,” in *Photonic Systems for Antenna Applications Symposium V*, ARPA, Arlington, VA (January 1995).
27. J. G. Wright, L. A. Coryell, W. H. Chang, R. A. Lux, and T. J. Tayag, “Fundamental design of integrated photonic systems for phased array antenna control,” in *43rd International Wire and Cable Symposium Proceedings*, IWCS, Inc., Eatontown, NJ (November 1994).
28. G. P. Behrmann, T. J. Tayag, D. W. Prather, and S. D. Sarama, “Athermalization of optical systems via diffractive optical elements,” in *19th Army Science Conference Proceedings*, Department of the Army, Washington DC (1994).
29. D. W. Prather, J. N. Mait J. van der Gracht, and T. J. Tayag, “Diffractive optical elements for generating arbitrary line foci,” in *Conference on Binary Optics*, NASA Conference Publication 3227 (1993).
30. T. J. Tayag, B. M. Sadler, and J. M. Pellegrino, “Integrated optical two-dimensional time-integrating correlator,” in *Optical Design for Photonics*, OSA Technical Digest Series, vol. 9, Optical Society of America, Washington DC (1993).
31. J. Pellegrino, E. Adler, A. Filipov, L. Harrison, J. van der Gracht, D. Smith, T. Tayag, and E. Viveiros, “Photonics for Aerospace Sensing,” in *Optical Technologies for Aerospace Sensing*, SPIE Critical Reviews of Optical Science and Technology Proceedings, vol. CR47, J. E. Pearson, ed. (1992).
32. T. J. Tayag, J. J. Sluss, Jr., and T. E. Batchman, “Continuous mode operation of a PRIZ space-time light modulator,” in *Sensor Fusion III*, Proceed. SPIE, vol. 1306 (1990).

Paper Presentations and Workshops:

1. T. J. Tayag, “Laser Safety,” *Texas Christian University: Responsible Conduct of Research Workshop*, Ft. Worth, TX (April 2010).
2. X. Zhao and T. J. Tayag, “Investigation of Particle Trajectory in a Rotating Wall Vessel Bioreactor,” *Texas Christian University: Student Research Symposium*, Ft. Worth, TX (April 2010).
3. T. J. Tayag and S. D. Dimitrijevic, “Rotating Bioreactor for Real-time Image Analysis and Automated Control,” *University of North Texas Health Science Center Technology Transfer and Commercialization Briefing*, Ft. Worth, TX (October 2009).
4. M. Hellman, M. Owings, V. Kosmopoulos, R. E. Cote’, T. J. Tayag, and A. Nana, “Comparing Fatigue Between FiberWire and Stainless Steel for the Repair of Transverse Patella Fractures,” *University of North Texas Health Science Center Research Appreciation Day*, Ft. Worth, TX (March 2009).
Note: Awarded First Place for the Texas College of Osteopathic Medicine (TCOM) Poster and also Awarded First Place for the TCOM Honors Student Poster
5. P. Kumar, A. Thomas, R. S. Weis, and T. J. Tayag, “Digital processing of an interferometric velocimeter for ballistic shock measurement,” *Texas Christian University: Student Research Symposium*, Ft. Worth, TX (April 2009).
Note: Awarded Best Undergraduate Engineering Poster.
6. H. A. Carlson, S. Simmons, M. Roso, R. Bunata, T. J. Tayag, and R. Cote’, “Gliding Resistance Testing

System for Flexor Tendon Repair Research,” *Texas Christian University: Student Research Symposium*, Ft. Worth, TX (April 2008).

Note: Awarded Best Undergraduate Engineering Poster.

7. L. C. Del Gallego, T. J. Tayag, and S. D. Dimitrijevič, “Dynamic Fluorescence Microscopy,” *Texas Christian University: Student Research Symposium*, Ft. Worth, TX (April 2007).
Note: Awarded Best Undergraduate Engineering Poster.
8. C. S. Ghassemi, T. J. Tayag, and S. D. Dimitrijevič, “Optical Characterization of Human Tissue Equivalents,” *Texas Christian University: Student Research Symposium*, Ft. Worth, TX (April 2006).
9. M. C. Johnson, T. J. Tayag, and S. D. Dimitrijevič, “Fluorescence Imaging within RWV Bioreactors,” *Texas Christian University: Student Research Symposium*, Ft. Worth, TX (April 2006).
Note: Awarded Best Undergraduate Engineering Poster.
10. T. J. Tayag, M. C. Johnson, E. Ettingerand, and S. D. Dimitrijevič, “Feedback Optimization for Cell Aggregation – Tissue Growth in Rotating Wall Vessel Bioreactors,” *University of North Texas Health Science Center: Research Appreciation Day*, Ft. Worth, TX (April 2006).
11. A. Chennareddy Gari and T. J. Tayag, “Computer simulation of a rotating wall vessel bioreactor,” *IEEE MetroCon 2005*, Arlington, TX (September 2005).
12. J. Shankardas, T. J. Tayag and S. D. Dimitrijevič, “Tissue remodeling and contraction – In vitro studies,” *IEEE MetroCon 2005*, Arlington, TX (September 2005).
13. A. Chennareddy Gari and, T. J. Tayag, “Computer simulation of a rotating wall vessel bioreactor,” *Texas Christian University: Student Research Symposium*, Ft. Worth, TX (April 2005).
14. T. J. Tayag, “Determining the optical properties of turbid media,” *University of North Texas Health Science Center: Cell Motility Seminar Series*, Fort Worth, TX (December 2004).
15. T. J. Tayag, “Modeling particle motion in a rotating wall vessel bioreactor,” *University of North Texas Health Science Center: Cell Motility Seminar Series*, Fort Worth, TX (May 2004).
16. R. A. Weber, T. J. Tayag, and L. J. Shannon, “Simulation of an interferometric demodulation algorithm for characterizing radio frequency MEMS,” *MRCEDM Research Festival*, Denton, TX (April 2004).
17. R. A. Weber, L. J. Shannon and, T. J. Tayag, “Applications and optical characterization of RF MEMS,” *Texas Christian University: Student Research Symposium*, Ft. Worth, TX (April 2004).
18. L. J. Shannon, R. A. Weber, J. Shankardas, T. J. Tayag, and S. D. Dimitrijevič, “Optical measurement of contracting biological cells,” *Texas Christian University: Student Research Symposium*, Ft. Worth, TX (April 2004).
Note: Awarded Sigma Xi’s Best Undergraduate Paper for Interdisciplinary Research.
19. T. J. Tayag, “Interferometric sensing of MEMS and biological structures,” *IEEE MetroCON 2003: Enabling Technology Track*, Arlington, TX (September 2003).
20. R. C. Watson and T. J. Tayag, “An algorithm for demodulating an interferometer in the frequency domain,” *Texas Christian University: Student Research Symposium*, Ft. Worth, TX (April 2003).
21. B. D. Pitt, T. J. Tayag, and M. L. Nelson, “Digital demodulation of an optical interferometer using the Goertzel algorithm,” *Texas Christian University: Student Research Symposium*, Ft. Worth, TX (April 2003).

22. B. K. Searcey, B. D. Pitt, J. Kern, T. J. Tayag, and S. D. Dimitrijevisch, "Development of an environmental chamber for the interferometric measurement of contracting fibroblast cells," *MRCEDM Research Festival*, Ft. Worth, TX (April 2003).
23. B. D. Pitt, T. J. Tayag, E. S. Kolesar, W. E. Odom, and A. J. Jayachandran, "Integration of a fiber optic interferometer with a MEMS probe station," *MRCEDM Research Festival*, Ft. Worth, TX (April 2003).
24. R. C. Watson and T. J. Tayag, "An algorithm for demodulating an interferometer in the frequency domain," *MRCEDM Research Festival*, Ft. Worth, TX (April 2003).
25. T. J. Tayag, S. D. Dimitrijevič, J. Kern, T. H. Summers, and C. G. Davis, "Interferometric measurement of contracting fibroblast cells within a collagen gel," *OSA Annual Meeting*, Orlando, FL (October 2002).
26. T. J. Tayag, "Research in integrated optics and digital signal processing at TCU," *MRCEDM Spring Poster Festival*, Denton, TX (March 2000).
27. C. T. Moore and T. J. Tayag, "Interferometric characterization of microelectromechanical systems," *5th Annual Student Research Conf.*, West Texas A&M University, Canyon, TX (November 1998).
28. F. A. Varela and T. J. Tayag, "Characterization of a wavelength division multiplexer," *5th Annual Student Research Conf.*, West Texas A&M University, Canyon, TX (November 1998).
Note: Awarded 2nd Place in the Student Paper Contest (Engineering Technology Category).
29. T. J. Tayag and D. M. Mackie, "Etch depth dependence of strip-loaded multimode interference devices," *OSA Annual Meeting/ILS-XI*, Rochester, NY (October 1996).
Note: Distinguished as 1 of 5 "Highlighted Posters" from a field of about 20 papers.
30. T. J. Tayag, "ARL Research in Optoelectronic Devices and Architectures," *ARPA Workshop on Optical Micronetworks (OMNET)*, Arlington, VA (December 1995).
31. G. W. Bryant, T. J. Tayag, and D. M. Mackie, "Implementing and modeling self-imaging waveguide beamsplitters," *CLEO/QELS'95*, Baltimore, MD (May 1995).
32. T. J. Tayag and G. W. Bryant, "Self-imaging multimode beamsplitters based on a guide/antiguide waveguide structure," *OSA Annual Meeting/ILS-X*, Dallas, TX (October 1994).
33. G. P. Behrmann, T. J. Tayag, D. W. Prather, and S. D. Sarama, "Hybrid optics for athermalization and achromatization," *OSA Annual Meeting/ILS-X*, Dallas, TX (October 1994).
34. T. J. Tayag, "Waveguide Beamsplitters for the Optical Control of Phased Arrays," *Workshop on Optically Controlled Phased Array Antennas*, Ft. Monmouth, NJ (July 1994).
35. D. M. Mackie and T. J. Tayag, "Integrated Photonic Processing Systems," *Workshop on Dry Etching for Photonic Applications*, Ft. Monmouth, NJ (June 1993).
36. T. J. Tayag, D. E. Mattox, and D. D. Duncan, "Measurement of ossicular movement with a laser interferometer," *Crowe Symposium: New Perspectives in Hearing Science and Rehabilitation*, Baltimore, MD (October 1986).

Technical Reports:

1. T. J. Tayag, T. S. Garcia, and A. A. Reed, "TCU Investigation of a Helmet Mounted Display – Phase 2," Final Technical Report, *Bell Helicopter Textron, Inc.* (May 2011).

2. T. S. Garcia, A. A. Reed, and T. J. Tayag, "TCU Investigation of a Helmet Mounted Display," Final Technical Report, *Bell Helicopter Textron, Inc.* (June 2010).
3. A. Thomas, P. Kumar, R. S. Weis, and T. J. Tayag, "Ballistic Shock Measurement System Using Optical Fibers – Phase 2," Final Technical Report, *U.S. Army Aberdeen Test Center* (August 2008).
4. T. J. Tayag and R. S. Weis, "Ballistic Shock Measurement System Using Optical Fibers," Technical Report, *U.S. Army Aberdeen Test Center* (July 2007).
5. T. J. Tayag and B. L. Bachim, "Interferometric optical phase tomography of intraocular lenses," Final Technical Report, *Alcon Research, Ltd.* (November 2006).
6. T. J. Tayag, R. C. Watson, and C. G. Davis, "Demodulation of Interferometric Sensor," Final Technical Report, *Weatherford Completion and Production Systems* (July 2005).
7. T. J. Tayag, "Smart sensors based on integrated optics and microelectromechanical systems," *U.S. Army Research Laboratory*, ARO Contract Number DAAG55-98-0477 (July 2003).
8. B. D. Pitt and T. J. Tayag, "Characterization of the contraction of fibroblast cells using interferometry," *Technical Report – NSF: Research Experiences for Undergraduates*, Arlington, TX (June 2003).
9. T. J. Tayag, B. D. Pitt, B. K. Searcey, "Fundamental technology development for a light projection array: Optical design," *Keyotee, Inc.* (January 2003).
10. T. J. Tayag and S. M. Penninck, "Design, modeling, and fabrication of a quasi-optical power combiner based on the Talbot effect," *Army Research Office Final Technical Report*, ARO Grant Number DAAG55-98-1-0440 (February 1999).
11. T. J. Tayag and D. M. Mackie, "A technique to ease the fabrication tolerance of integrated optical power splitters," *Army Research Laboratory Technical Report ARL-TR-1517* (February 1998).
12. R. M. Jenkins, J. M. Heaton, and T. J. Tayag, "Fourier transformer design concepts," *United Kingdom Defence Research Agency Technical Report DRA/EL/LPD/CR96/T69.216/M1/1.0* (August 1996).
13. D. D. Duncan, C. A. Mitchell, C. C. Bates, and T. J. Tayag, "Measurement of IR dome deformations," *Johns Hopkins University/Applied Physics Laboratory Technical Report* (August 1987).
14. T. J. Tayag, "Refractive index of N₂, Ar, SF₆, and CO₂ as a function of temperature: Experimental configuration," *JHU/Applied Physics Laboratory Technical Report F1F(4)87-U-205* (August 1987).
15. T. J. Tayag, "Characterization of the scattering properties of IR windows," *Johns Hopkins University/Applied Physics Laboratory Technical Report F1F(4)87-U-037* (March 1987).
16. T. J. Tayag and D. D. Duncan, "Status report: Compliance measurement of middle ear components *in vivo*," *Johns Hopkins University/Applied Physics Laboratory Technical Report F1F(4)86-U-248* (December 1986).

Patents and Invention Disclosures:

1. T. J. Tayag and C. A. Belk, "Method and system for stabilizing and demodulating an interferometer at quadrature," U. S. Patent No. 6,597,458 (July 2003).
2. T. J. Tayag and T. E. Batchman, "Self-imaging waveguide devices for wavelength division multiplexing applications," U. S. Patent No. 5,862,288 (issued 19 January 1999).

3. T. J. Tayag, "Easily manufacturable optical self-imaging waveguide devices," U.S. Patent No. 5,640,474 (issued 17 June 1997).

Invited Presentations:

1. T. J. Tayag, "Advanced rotating bioreactor technology," *Texas Christian University School of Business: New Venture Planning Course*, Fort Worth, TX (September 2010).
2. T. J. Tayag, "Electrical engineering technologies applied to problems in tissue science," *University of North Texas/Health Science Center: Guest Lecture Series*, Fort Worth, TX (December 2004).
3. T. J. Tayag, "Determining the optical properties of turbid media," *University of North Texas/Health Science Center: Cell Motility Seminar Series*, Fort Worth, TX (December 2004).
4. T. J. Tayag, "Modeling particle motion in a rotating wall vessel bioreactor," *University of North Texas/Health Science Center: Cell Motility Seminar Series*, Fort Worth, TX (May 2004).
5. T. J. Tayag, "Interferometric sensing of MEMS and biological structures," *Johns Hopkins University/Applied Physics Laboratory*, Laurel, MD (July 2003).
6. T. J. Tayag, "Optical MEMS Research at TCU: Low Frequency Sensor Applications," *Army Research Laboratory Internal Seminar*, Adelphi, MD (December 1997).
7. T. J. Tayag, "Talbot Effect Waveguide Devices for Optical Multiplexing Architectures," *LEOS Section Meeting*, Ft. Worth, TX (November, 1997).
8. T. J. Tayag, "Self-imaging Waveguide Research at the Army Research Laboratory," *University of Texas Austin, J. J. Pickle Research Center Seminar Series*, Austin, TX (April 1997).
9. T. J. Tayag, "ARL Research in Optical Technologies," *University of Oklahoma ECE Department Seminar*, Norman, OK (October 1994).
10. T. J. Tayag, "ARL Research in Integrated Photonic Processing Systems," *University of Surrey EE Department Briefing*, Surrey, United Kingdom (June 1994).
11. T. J. Tayag, "Integrated Photonic Processing of Synthetic Aperture Radar Signals," *Defence Research Agency*, Malvern, United Kingdom (November 1993).

FUNDING SUPPORT:

Current:

Title: "TCU Investigation of a Cockpit Synthetic Display System"
Type: Educational/Research
Principal Investigator: T. J. Tayag
Source: Bell Helicopter Textron, Inc
Period: August 2011 through May 2012

Completed:

Title: "TCU Investigation of a Helmet Mounted Display – Phase 2"
Type: Research

Principal Investigator: T. J. Tayag
Source: *Bell Helicopter Textron*
Period: July 2010 through April 2011

Title: “Interferometric System for Intraocular Lenses”
Type: Training/Educational
Principal Investigator: Z. Zhang
Mentor: T. J. Tayag
Source: *TCU Undergraduate Research and Creative Activities Initiative*
Period: October 2010 through May 2011

Title: “TCU Investigation of a Helmet Mounted Display”
Type: Research
Principal Investigator: T. J. Tayag
Source: *Bell Helicopter Textron*
Period: January 2010 through June 2010

Title: “Characterization of a Rotating Bioreactor for Fluorescent Imaging”
Type: Research
Principal Investigator: T. J. Tayag
Source: *Metroplex Research Consortium for Electronic Devices and Materials (MRCEDM)*
Period: June 2009 through June 2010

Title: “Design and Validation of a Rotating Wall Vessel Culture System”
Type: Research
Principal Investigator: T. J. Tayag
Co-Investigator: S. D. Dimitrijevic
Source: *University of North Texas Health Science Center*
Period: January 2009 through December 2009

Title: “Biomechanical Testing Using the MTS Mini Bionix Test System”
Type: Research
Principal Investigator: T. J. Tayag
Source: *University of North Texas Health Science Center and John Peter Smith Hospital*
Period: December 2007 through August 2008

As a follow-on to the above research contract, I contributed to these 2 funded proposals:

Title: “The Biomechanical Testing of Tension Band Fixation of Transverse Fractures of the Patella: A Standardized Testing Platform”
Type: Research
Principal Investigator: P. Wright
Consultant: T. J. Tayag
Source: *John Peter Smith Department of Academic Affairs*

Title: “Evaluating Factors Influencing Sheer Strength in the Placement of the Patellar Component of Total Knee Arthroplasty”
Type: Research
Principal Investigators: N. E. Lesley and R. Wagner
Co-Investigators: T. J. Tayag and R. Cote
Source: *John Peter Smith Hospital*
Period: November 2007 through December 2008

Title: “Ballistic Shock Measurement System Using Optical Fibers – Phase II”
Type: Research
Principal Investigator: R. S. Weis
Co-Investigator: T. J. Tayag
Source: *U. S. Army Aberdeen Test Center*
Period: July 2007 through September 2008

Title: “Ballistic Shock Measurement System Using Optical Fibers”
Type: Research
Principal Investigator: R. S. Weis
Co-Investigator: T. J. Tayag
Source: *U. S. Army Aberdeen Test Center*
Period: June 2006 through May 2007

Title: “Modeling the Tomographic Reconstruction of an IOL”
Type: Research
Principal Investigator: T. J. Tayag
Source: *Alcon Research, Ltd.*
Period: August 2006 through February 2007

Title: “Smart Bioreactors”
Type: Research
Principal Investigator: T. J. Tayag
Source: *University of North Texas Health Science Center*
Period: January 2007 through August 2007

Title: “Spectroscopy Revealed Booth”
Type: Education
Principal Investigator: T. J. Tayag
Source: *SPIE: The International Society for Optical Engineering*
Period: July 2006 through June 2007

Title: “Fluorescent Imaging of a Rotating Wall Vessel Bioreactor”
Type: Research
Principal Investigator: T. J. Tayag
Source: *Texas Christian University: Research and Creative Activities Fund*
Period: June 2006 through May 2007

Title: “Fluorescent Imaging of Living Cells”
Type: Training/educational
Principal Investigator: L. C. Del Gallego
Co-Investigator: T. J. Tayag
Source: *TCU Science and Engineering Research Center*
Period: Fall 2006

Title: “Optical Characterization of Human Tissue Equivalents”
Type: Training/educational
Principal Investigator: C. S. Ghassemi
Co-Investigator: T. J. Tayag
Source: *TCU Science and Engineering Research Center*
Period: Spring 2006

Title: “Fluorescent Imaging in Real-Time”
Type: Training/educational
Principal Investigator: M. C. Johnson
Co-Investigator: T. J. Tayag
Source: *TCU Science and Engineering Research Center*
Period: Spring 2006

Title: “Preliminary Study of a Machine Vision System for Tissue Bioreactors”
Type: Research
Principal Investigators: T. J. Tayag
Source: *TechFortWorth*
Period: May 2004

Title: “Fundamental Technology Development for a Light Projection Array”
Type: Research
Principal Investigators: E. S. Kolesar and T. J. Tayag
Source: *Keyotee, Inc.*
Period: August 2002 through August 2003

Title: “Interferometric Sensors”
Type: Research
Principal Investigator: R. S. Weis
Co-Investigator: T. J. Tayag
Source: *Weatherford Completion Systems* (formerly *CiDRA Optical Sensing Systems*)
Period: May 2001 through December 2001

Title: “Digital Signal Processing Hardware and Software”
Type: Training/educational (equipment donation)
Principal Investigator: T. J. Tayag
Source: *Texas Instruments: DSP University Program*
Periods: 1998 through 2006

Title: “Smart Sensors Based on Integrated Optics and Microelectromechanical Systems”
Type: Research
Principal Investigator: T. J. Tayag
Source: *Army Research Office*
Period: September 1998 through August 2002

Title: “Design, Modeling, and Fab. of a Quasi-Optical Power Combiner Based on the Talbot Effect”
Type: Research
Principal Investigator: T. J. Tayag
Source: *Army Research Office*
Period: July 1998 through January 1999

Title: “A Novel Acoustic Sensor”
Type: Research
Principal Investigator: T. J. Tayag
Co-Investigator: E. S. Kolesar
Source: *Texas Christian University: Research and Creative Activities Fund*
Period: June 1998 through May 1999

Title: "Talbot Effect Devices for Optical Communications"
Type: Research
Principal Investigator: T. J. Tayag
Source: *Texas Christian University: Research and Creative Activities Fund*
Period: November 1997 through May 1998

Title: "Visiting Scientist at the U.S. Military Academy"
Type: Training/educational
Principal Investigator: T. J. Tayag
Source: *Army Research Laboratory*
Period: August 1996 through June 1997

Title: "Integrated Photonics for Code-Division Multiple Access Communications"
Type: Research
Principal Investigator: T. J. Tayag
Co-Investigator: G. W. Euliss
Source: *Army Research Laboratory: Director's Research Initiative*
Period: December 1994 through October 1995

UNIVERSITY SERVICE:

Student Theses/Papers Advised:

1. Undergraduate Honors Program Advisor for Julia M. Bradley, "Pancreatic Islet Suspension in Rotating Bioreactors," Texas Christian University (May 2012)
2. Undergraduate Honors Program committee member for Diego Estrada, "A Motionless Magnetometer Calibration System," Texas Christian University (May 2010)
3. Undergraduate Honors Program committee member for Akhil Thomas, "Fiber Optic Ballistic Shock Vibrometer Sensor," Texas Christian University (May 2009)
4. Undergraduate Honors Program Advisor for Christopher A. Belk, "The Digital Stabilization and Demodulation of a Fractional Fringe Interferometer," Texas Christian University (May 2000)
5. Master's Thesis committee member for Suryaprasad Kareenahalli, "Multimode Interference Devices and Applications to WDM," University of Maryland (May 1997)

Committee Service:

Academic Appeals Committee, TCU (2011-2014)
Graduate Faculty, College of Science and Engineering (1998-2004, 2009-present)
Curriculum Committee, TCU College of Science and Engineering (2000-2001, 2008-2010)
Tenure/Promotion Advisory Committee, TCU College of Science & Engineering (2006-2007)
Student Research Symposium Committee, TCU College of S&E, chair (2005), member (2004-2006)
TCU Mathematics Program Review Committee (2004-2005)
TCU Admissions and Retention Committee, co-chair (2006), member (2003-2008)
Jerry W. Allen Scholarship Committee, TCU Engineering Department (2006)
TCU Kinesiology Program Review Committee (2002-2003)
SACS Educational Programs Committee, Special Programs Subcommittee (2001)

Appointments and Volunteer Service:

Liaison to the Center for International Studies, TCU College of S&E (2009-present)
TCU Laser Safety Officer (2009-present)
TCU Common Reading Group Leader (2008-2011)
TCU Engineering Lecture Series Coordinator (2005-present)
TCU Engineering Department Library Liaison (1998-2007)
TCU Engineering Department Homepage Coordinator (1998-2005)
Fundamentals of Engineering Exam Review Session, Engineering Economics (1998-2004)
TCU Frog Camp Faculty Facilitator (1998-2001)

PROFESSIONAL SERVICE:

Membership in Professional Organizations:

Institute of Electrical and Electronic Engineers, senior member (since 2005)
SPIE – The International Society for Optical Engineering, member (since 2000)
Metroplex Research Consortium for Electronic Devices and Materials, member (since 1999)
American Society for Engineering Education, member (since 1998)
Optical Society of America, member (1989-2003)
Tau Beta Pi Engineering Honor Society, elected member (since 1985)
Eta Kappa Nu Electrical Engineering Honor Society, elected member (since 1985)
Delta Phi Alpha German Honor Society, elected member (since 1984)

Technical Manuscript/Textbook Reviewer:

AVS Journal of Vacuum Science and Technology
IEEE Journal of Selected Topics in Quantum Electronics
IEEE Transactions on Education
McGraw-Hill Publisher
OSA Applied Optics
OSA Journal of the Optical Society of America A
OSA Optics Express
OSA Optics Letters
Pearson Prentice-Hall Publisher
SPIE Optical Engineering

Technical Proposal Reviewer: *U.S. Army Research Office*, Research Triangle Park, NC (1992-1995).

Tenure/Promotion Evaluator:

Baylor University
United States Military Academy

Conference Chairmanship:

IEEE MetroCON, Biotechnology Track, Arlington, TX (2004-present).
The Fifth Biennial Department of Defense Photonics Conference, Session 6: Modeling, McLean, VA (1996).

Committee Membership:

UNTHSC Center for Commercialization of Fluorescence Technology, Board of Advisors (2006-present).
IEEE Ft. Worth Section, Acting-Secretary (2004).

IEEE Ft. Worth Section, Executive Committee (2003-present).
Metroplex Research Consortium for Electronic Devices and Materials, Steering Committee (2001-present).

Laser/Optics Demonstrations (Partial listing):

Nolan Catholic High School, Ft. Worth, TX
Holy Family Catholic School, Ft. Worth, TX
Bruce Shulkey Elementary School, Ft. Worth, TX
Catholic Charities Assessment Center, Ft. Worth, TX
Texas Society of Professional Engineers, Education Night, Ft. Worth, TX
Midway Park Elementary School, Euless, TX
Maxie Speer Elementary School, Ft. Worth, TX
Swift Elementary School, Arlington, TX
Arlington Heights High School, Ft. Worth, TX
Shady Oaks Elementary School, Hurst, TX
North Richland Hills Middle School, North Richland Hills, TX
South Euless Elementary School, Euless, TX
George C. Clark Elementary School, Ft. Worth, TX
The Academy at West Birdville, Haltom City, TX
Monnig Middle School, Ft. Worth, TX
Calvert Hall High College High School, Baltimore, MD
Immaculate Conception Elementary School, Baltimore, MD
St. Mark's Elementary School, Baltimore, MD
Ashland Preschool, Baltimore, MD

PROFESSIONALLY RELATED HONORS AND AWARDS:

Coleman Faculty Fellow in Entrepreneurship, *TCU Neeley Entrepreneurship Center*, Ft. Worth, TX (2010, 2011)
Certificate of Appreciation, *IEEE MetroCon Executive Committee*, Fort Worth, TX (2009, 2010)
Outstanding Service Award, *IEEE Fort Worth Section* (2007)
Appreciation Award, MetroCon Track Chair, *IEEE Fort Worth Section* (2006, 2007)
Certificate of Appreciation, Career Day, *Bruce Shulkey Elementary School* (2007)
Dean's Appreciation Award, TCU CS&E, 2005 Student Research Symposium Chair (2005)
Asian American Chamber of Commerce, Awards Banquet Nomination,
Education Category and Science and Technology Category (2002)
Research and Development Achievement Award, U. S. Army (1997)
Commander's Award for Civilian Service, United States Military Academy (1997)
U.S. Army Commendation, Army Research Laboratory, monetary award (1993)

PERSONAL DATA:

Date of Birth:	24 January 1964
Marital Status:	married with 2 daughters
Citizenship:	U.S.
Ethnic Origin:	pacific islander
Hobbies:	tennis, reading