Don Allen Gregory

Curriculum Vitae (October 2020)

General:

Citizenship: US
Email: gregoryd@uah.edu
Current Position: Distinguished Professor of Physics, the University of Alabama in Huntsville

Education:

Ph.D., Physics, University of Alabama in Huntsville, 1984, Dissertation title: *Real-Time, Large Memory Holographic Pattern Recognition*, advisor: Prof. Graeme Duthie
M.S., Physics (with thesis), University of Alabama in Huntsville, 1978, Thesis title: *Infrared Absorption by Highly Transparent Solids*, advisor: Prof. James A. Harrington
B.S., Physics, Math, Secondary Education, University of Alabama in Huntsville, with senior thesis, *Polishing of Infrared Window Materials*, and teaching certificate, 1975
A.S., Physics, Math, Gadsden State College, Gadsden, Alabama, 1972

Experience:

2014-present, Distinguished Professor of Physics, the University of Alabama in Huntsville
1999-2014, Professor of Physics, and faculty member of the Optical Science and Engineering Program and the Materials Science Program, the University of Alabama in Huntsville
1992-1999, Associate Professor of Physics and faculty member of the Optical Science and Engineering Program and the Materials Science Program, the University of Alabama in Huntsville
1982-1992, Electrical Engineer (GS-12), Research Physicist (GS-13, GS-14, GS-15), Supervisory Research Physicist (GM-15, job series 1310, military equivalent rank of full colonel), US Army Missile Command, Redstone Arsenal, Alabama, Adjunct Professor of Physics, The University of Alabama in Huntsville; Adjunct Professor of Electrical Engineering, The Pennsylvania State University
1980-1982, Materials Engineer (GS-11), NASA, Marshall Space Flight Center
1979-1980, High School Physics and Advanced Math Teacher, Madison County School System, Alabama

Government— GM-15 Branch Chief, Photonics and Laser Sciences (Research Directorate), Supervisory Research Physicist, US Army Missile Command, Redstone Arsenal, Alabama. Technical and budgetary management of up to 20 scientists, engineers, technicians, and support personnel ranging in grade from GS-5 to GS-15. Managed scientific research and engineering (in-house and contracted) programs in fundamental physics, optics, and laser science. Courses in management of technical personnel. Acting Director of US Army Research Directorate. Command representative at DARPA sponsored government tri-service (Army, Navy, Air Force) meetings. Exceptional Performance

Awards as both a scientist and as a supervisor. Department of the Army Research and Development Award for technical management of the Optical Precision Deep Attack Missile System: a multi-million dollar, multi-government agency five year research and development program involving NASA/JSC, the USAF/RADC, the US Army Space Programs Office, and multiple contractors. Department of the Army Technology Transfer Award.

University— Management of graduate student research teams, writing proposals resulting in an unbroken record of continuous external research funding and equipment to support graduate students over the past twenty years. Technical and budgetary management of government and industry funded university contracts. Consultant to industry. Chairman, to completion of degree, of 48 Graduate Student Supervisory Committees (22 Ph.D. students and 27 M.S. students, with thesis, graduated in disciplines within science and engineering). Ph.D. student supervisory committee member at the Pennsylvania State University, Carnegie Mellon University, and the University of Alabama at Birmingham. Taught most of the undergraduate and graduate core classes in physics at UAH. Exceptional teaching evaluations (as indicated by SIE scores). Teacher Effectiveness Committee. Alabama State Science Fair team leader. North Alabama Science Center advisor. Secured four scholarships for undergraduate students from NCSLI, the international organization for calibrations and standards. North Alabama Science Olympiad co-founder and lead technical supervisor. Secondary Education accreditation committee. Optical Science and Engineering Curriculum Committee. Physics Curriculum Committee. Undergraduate Committee chairman. Optics and Photonics graduate degree curriculum developer. Sigma Pi Sigma faculty advisor. Optics Program Committee Chairman. College of Science Dean's Service Award (2000). UAH Foundation Teacher of the Year Award (2004). "Best Damn Physics Professor" award from UAH Society of Physics Students (2012)

Technical— More than 130 refereed open-literature technical publications in internationally circulated journals in fields ranging from basic physics and optics to materials, acoustics, and advanced propulsion. Recent publications deal with ablative laser propulsion, pattern recognition, Fresnel optics, phase transition measurements, optical metrology, optical aberrations, and x-ray optics. Graduate students under supervision have recently, or are currently performing research in basic physics, nonlinear optics, optical information processing, large area optics, fundamental quantum and electromagnetic properties of materials, atmospheric turbulence, sensor physics, and advanced spacecraft propulsion. More than 150 published proceedings and technical presentations at internationally recognized scientific meetings. 14 US patents, two pending. IEEE Donald Fink Publication of the Year Award (1998). Cited in major optics textbooks used worldwide. Membership in professional societies (past and present): Optical Society of America, Society of Photo-optical Instrumentation Engineers, American Physical Society, Sigma Pi Sigma, Sigma Xi, Huntsville Electro-optic Society (president), Authors Guild (New York). Previous research interests: chemical lasers, high energy charged particle detection, long duration microgravity and intense solar illumination effects, and solar cells for deep space missions. Current research interests: electromagnetic and optical properties of materials, optical architectures and devices, optical sensors, holography, pattern recognition, solar pumped lasers, optical power generation, propagation and coherence,

fundamental physics of advanced space propulsion architectures, large area optics for solar power collection, x-ray optics, and fundamental optical and electrical standards.

Papers published in more than 30 different internationally circulated refereed technical journals covering areas from basic physics to electrical engineering, optics, acoustics, propulsion, material science, chemistry, energy, and computer science. These journals and their current impact factors (if available) include:

1. Applied Physics Letters 3.794 (ranked in top ten most cited journals in all fields)
2. Applied Optics 1.689
3. Inorganic Chemistry 4.593
4. AIAA Journal of Energy
   (discontinued, no impact factor available)
5. AIAA Journal of Propulsion and Power 0.717
6. J. Optical Society of America (A) 1.665
7. IEEE Spectrum 1.322
8. Optics Letters 3.385
9. IEEE Photonics 2.320
10. Optical Engineering 0.880 (a popular but relatively new journal compared to some of the others listed)
11. Optics News 1.689
12. Applied Physics (B) 2.210
13. J. Optics and Laser Technology 1.365
14. Microwave and Optical Tech. Letters 0.585
15. J. Optical Society of America (B) 2.210
16. J. Microcomputer Applications 1.467
    (Now called the Journal of Network and Computer Applications)
17. J. of the Franklin Institute 2.720
18. J. Military and Aerospace Electronics
19. Optik 0.730
20. Optical Communications 1.438
21. Journal of Physics (D) 2.528
22. Journal of Optics (A) 1.990
23. Acoustic Research Letters 1.080
24. Journal of Technical Acoustics
25. J. Electrochemical Society 2.588
26. J. Engr. Computing and Architectures 1.980
27. J. American Ceramics Society 2.107
28. Materials Research Society Bulletin 2.141
29. NASA Tech. Briefs
30. Intl. J. Network Security 1.392
31. Optics Express 3.546
32. Journal of Modern Optics 1.475
33. AIAA Journal 1.359
34. Journal of Biological Optics 2.926
35. Journal of Nanoparticles (new journal, 2013)

36. Microscopy 1.743
37. Review of Scientific Instruments 1.420

Technical, International— Regular speaker at technical conferences attended by researchers worldwide. NCSLI invited speaker, twice [National Conference of Standards Laboratories International has over 1000 member organizations from academic, scientific, industrial, commercial, and government facilities around the world]. International Commission on Optics invited speaker. ["The International Commission for Optics was created in 1947. It is an Affiliated Commission of the International Union of Pure and Applied Physics (IUPAP), and a Scientific Associate of the International Council of Science (ICSU). Its objective is to contribute, on an international basis, to the progress and diffusion of knowledge in the field of optics"]. Twice invited speaker at the Gordon Research Conference on Optical Signal Processing and Holography. ["The Gordon Research Conferences provide an international forum for the presentation and discussion of frontier research in the biological, chemical, and physical sciences, and their related technologies"]. Member of technical delegation (optics representative) to Israel (Maf'at). ["Maf'at is a joint administrative body of the Israeli Ministry of Defense and Israel Defense Forces (IDF) that coordinates between the Ministry of Defense, the IDF, the military industries, Israel Military Industries, Israel Aerospace Industries, Rafael Advanced Defense Systems, the Institute for Biological Research and the Space Agency"].

Referenced in textbooks translated into Chinese, Russian, Spanish, and Japanese (e.g. *Fourier Optics*, by J.W. Goodman, *Optical Pattern Recognition*, by F.T.S. Yu)

Published papers and presentations regularly referenced by Japanese, Spanish, German, British, Australian, Russian, Chinese, and Korean researchers in articles appearing in internationally circulated technical journals. Representative examples, in the field of optical information processing, include:

"Current Summary of the Practical Use of Optical Correlators", Tomáš Harasthy, Ľuboš Ovseník, and Ján Turán, Department of Electronics and Multimedia Communications, Faculty of Electrical Engineering and Informatics, Technical University of Košice, SLOVAK REPUBLIC, *Acta Electrotechnica et Informatica*, Vol. 12, no. 4 (2013)

"Phase-only Modulation using a Twisted Nematic Liquid Crystal Television", Thomas H. Barnes, Tomoaki Eiju, Kiyofumi Matusda, and Naotake Ooyama, *Mechanical Engineering Laboratory, 1-2 Namiki, Tsukuba City, Ibaraki 305,* JAPAN*, Appl. Opt*., Vol. 28, no. 22 (1991)

"Characterization of VGA liquid crystal panels with partial phase-only modulation: Application to pattern recognition", Vallmitjana, s., Labastida, I., Martin-Badosa, E., Carnicer, A., and Juvells, I, Universitat de Barcelona, Departament de Fisica Aplicada i Òptica, Av., Diagonal 647, 08028 Barcelona, ESPAGNE, *Critical Reviews of Optical Science and Technology*, Euro-American workshop on optoelectronic information processing, Colmar, FRANCE (1999)

"Implementation of Real-time Human Face Recognition", Haisong Liu, Minxian Wu, Gang Cheng, Guofan Jin, ShiFu Yuan, Yingbai Yan, Tsinghua Univ. CHINA, *Proc. SPIE* 3159, Algorithms, Devices, and Systems for Optical Information Processing, 292 (1997)

"Le point sur les modulateurs spatiaux de lumière", G. Lebreton, Université de Toulon et du Var, Toulon, FRANCE, *Rev. Phys. Appl.* (Paris), Vol. 22, no. 10 (1987)

"Mapping of Correlation Filter Values Optimized to Phase", Nazif Demoli, Institute of Physics, Bijeni˘cka, Zagreb, CROATIA, *Fizika* B7 (1998) 4, 205–214

"Liquid Crystal Devices for Optical Correlation", Wen-Sheng Perng**,** Yih-Shyang Cheng**,** Ming-Wen Chang, National Central University TAIWAN, *Optical and Digital Pattern Recognition*, Proc. SPIE, Vol. 0754 (1987)

"An Implementation of an Optical Fourier-Transform Coprocessor using a Twisted-Nematic Liquid-Crystal Spatial Light Modulator", Pierre M. Lane, Doctoral Dissertation, Technical University of NOVA SCOTIA, Electrical Engineering Department (1996)

"Vision System based on Optical Wavelet Transform", Hong Yue**,** Shijie Dai**,** Qinghua Cui, Hebei Univ. of Technology CHINA, Proc. SPIE 5266, *Wavelet Applications in Industrial Processing*, 216 (2004)

"Developments in Real-time Speckle Metrology", Brian Bates, The Queen's University of Belfast IRELAND, Proc. SPIE, *Interferometry*, Vol. 1121, p. 374 (1990)

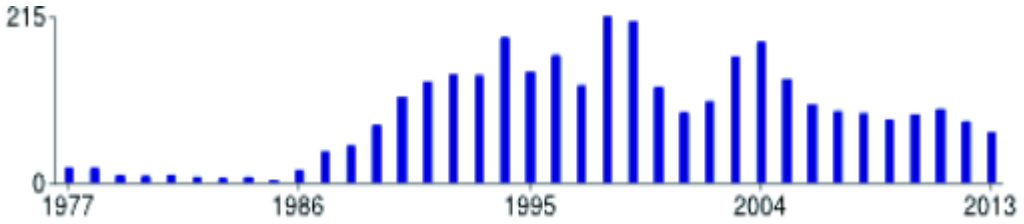
"Light Induced Transmission Changes in Liquid Crystal Displays", F. Docchio, Dipartimento di Elettronica per l"Autom., Brescia Univ., ITALY, Instrumentation and Measurement, IEEE Transactions on, Vol. 41, Issue 5 (1992)

"Real-time Color Image Correlation," Z. Q. Wang, C. M. Cartwright, C. Soutar, and W. A. Gillespie, Department of Electronic and Electrical Engineering, Dundee Institute of Technology, UNITED KINGDOM, *Appl. Opt.* Vol. 32, no. 5 (1993)

"Polarization Eigenvectors for Reflective Twisted Nematic Liquid Crystal Displays", Ignacio Moreno**,** Carlos R. Ferna´ndez-Pousa**,** Universidad Miguel Herna´ndez de Elche, Departamento de Ciencia y, Tecnologi´a de Materiales, Elche, SPAIN, *Opt. Engr.* Vol. 40, no. 10 (2001)

"Control Methods for Optical Components in a Dynamically Reconfigurable Optical Platform", Xianchao Wang, Junjie Peng, and Shan Ouyang, School of Computer Engineering and Science, Shanghai University, Shanghai, CHINA and School of Mathematics and Computational Science, Fuyang Normal College, Fuyang, CHINA, *Appl. Opt.*, Vol. 50, Issue 5, pp. 662-670 (2011)

Technical, citations— Career citations history (1977-2013). 3336 total citations. Cumulative h-index: 33. Cumulative i10 index: 70 (number of papers with at least 10 citations). Citations in last 4 years: 497. i10 index for last 4 years: 14



Non-technical, International— Author of nonfiction books, *Jungvolk* and *Two Soldiers, Two Lost Fronts*, translated into Polish and Spanish. Presentation proposal, "Children and Collective Adaptation in Post-War Germany" submitted to the semi-annual University of Salzburg, Germany conference, *Children and War: Past and Present*. "Stalingrad Diary", invited article, *Military Illustrated* (UK), August 2009, "A BDM Girl Comes to America", *World War II Magazine*, Winter 2013-14, "The Lost Wehrmacht Pioneer", *World War II Magazine*, July 2015

Open Literature Refereed Publications:

1. "Infrared Absorption Limits of HF and DF Laser Windows", M. Hass, J.A. Harrington, Don A. Gregory, and J.W. Davisson, *Appl. Phys. Lett.,* Vol.28, No. 10, May, 1976
2. "Infrared Absorption in Chemical Laser Window Materials", J.A. Harrington, Don A. Gregory, and W.F. Otto, *Appl. Opt.,* Vol. 12, No. 8, August, 1976
3. "Infrared Bulk and Surface Absorption by Nearly Transparent Crystals", H.B. Rosenstock, Don A. Gregory, and J.A. Harrington, *Appl. Opt*., Vol. 12, No. 9, September, 1976
4. "Infrared Absorption in Unintentionally Doped Alkalai Halides and Alkaline Earth Fluorides", J.A. Harrington, Don A. Gregory, J. Hass, and J.W. Davisson, *B. Am. Phys. Soc.,* Vol. 21, p.251, 1976
5. "Analysis of Laser Calorimetric Data", H.B. Rosenstock, M. Hass, Don A. Gregory, and J.A. Harrington, *Appl. Opt.,* Vol. 12, No. 11, 1977
6. "Laser Induced Chemistry of Diborane", S. Shatas, Don A. Gregory, R. Shatas, and C. Riley, *Inorg. Chem.,* Vol. 12, 1978

7. "Automated Laser Calorimetry", Don A. Gregory and R.B. McCown, *Appl. Opt.,* Vol. 18, No. 18, 1979
8. "Vacuum High Precision Interferometric Measurements of Low CTE Quartz and Graphite Epoxy", C.J. Rives, Don A. Gregory, H. Davis, and J.G. Castle, *J. Alabama Academy of Science,* Vol. 53, No. 3, 1982
9. "Solar Cell Screening Technique", Don A. Gregory and C.J. Rives, *AIAA J. Energy*, Vol. 7, No. 6, 1983
10. "Real Time, Multichannel, Multiplexed Pattern Recognition", Don A. Gregory and H.K. Liu, *Appl. Opt.,* Vol. 23, No. 24, 1984
11. "Large Memory Optical Correlator", Don A. Gregory and H.K. Liu, *JOSA (A),* Vol. 1, No. 12, 1984
12. "Acousto-Optically Addressed Fourier Transform Matched Filtering", Don A. Gregory and L. Huckabee, *Appl. Opt.,* Vol. 24, No. 6, 1985
13. "Real-Time Pattern Recognition", Don A. Gregory, *Optics News,* April, 1985
14. "Acousto-Optically Made and Addressed Fourier Transform Matched Filters", J.F. Hawk and Don A. Gregory, *Appl. Opt.,* Vol. 25, No. 3, 1986
15. "Real-Time Pattern Recognition Using a Modified Liquid Crystal Television in a Coherent Optical Correlator", Don A. Gregory*, Appl. Opt.,* Vol. 25, No. 4, 1986
16. "Optical Computing", Don A. Gregory (contributing author), *IEEE Spectrum*, cover story, August, 1986
17. "Optical Correlator Tracking Nonlinearity", Don A. Gregory, J.C. Kirsch, and J.L. Johnson, *Appl. Opt.,* Vol. 26, No. 2, 1987
18. "Matched Spatial Filtering Using a New Photopolymer", D.J. Lanteigne, T.D. Hudson, and Don A. Gregory, *Appl. Opt.,* Vol. 26, No. 2, 1987
19. "Adaptive Real-Time Pattern Recognition Using a Liquid Crystal TV", F.T.S. Yu and Don A. Gregory, *Appl. Opt.,* Vol. 26, 1987
20. "Optical Parallel Logic Gates Using Inexpensive Liquid Crystal Televisions", F.T.S. Yu, E. Tam, and Don A. Gregory, *Opt. Lett.,* Vol. 12, 1987
21. "Rayleigh Criteria Separation of Optical Correlation Signals", Don A. Gregory*, Appl. Opt.,* Vol. 26, 1987
22. "Real-Time Liquid Crystal XOR and XNOR Gate Binary Image Subtraction", F.T.S. Yu, S. Jutamulia, and Don A. Gregory, *Appl. Opt.,* Vol. 26, 1987
23. "Optical Correlators: From Theory to Reality", Don A. Gregory, *Photonics,* December, 1987
24. "Optical Computing That Really Works", Don A. Gregory, J.L. Johnson, and D.J. Lanteigne, *Opt. Engr. Rep.,* No. 46, 1987
25. "Pattern Recognition, Human and Mechanical", by S. Watanabe, book review by Don A. Gregory, *Opt. News,* January, 1987
26. "Design of Photopolymer Holograms for Optical Interconnect Applications", James Kirsch and Don A. Gregory, *Opt. Engr.,* Vol. 27, 1988
27. "Optical Characteristics of a Deformable Mirror Spatial Light Modulator", Don A. Gregory, Richard Juday, and Stanley Monroe, *Opt. Lett.,* Vol. 13, 1988
28. "Illumination Dependence of Joint Transform Correlation", Don A. Gregory, J.A. Loudin, and F.T.S. Yu, *Appl. Opt.,* Vol. 28, 1989
29. "Single Modulator Joint Transform Correlator", B. Javidi, Don A. Gregory, and J.L. Horner, *Appl. Opt.,* Vol. 28, 1989

30. "Optical Pattern Recognition Using Sequentially Addressed Matched Filter Arrays", James Kirsch, S.L. Pessoney, and Don A. Gregory, *Opt. Engr.,* Vol. 28, No. 5, 1989
31. "Optical Correlator Architectures Using a Deformable Mirror Device", T.D. Hudson and Don A. Gregory, *Appl. Opt.,* Vol. 28, No. 21, 1989
32. "Analytical Comparison of VanderLugt and Joint Transform Optical Correlators", X.J. Lu, F.T.S. Yu, and Don A. Gregory, *Appl. Phys. (B),* Vol. 51, 1990
33. "Autonomous Real-Time Tracking With an Adaptive Joint Transform Correlator", E. Tam, F.T.S. Yu, Don A. Gregory, and Richard Juday, *Opt. Engr.,* Vol. 29, No. 4, 1990
34. "Highly Efficient Joint Transform Correlator", Don A. Gregory, F.T.S. Yu, and E. Tam, *Opt. Lett.,* Vol. 15, 1990
35. "Adaptive Joint Transform Correlator for Real-Time Color Pattern Recognition", F.T.S. Yu, R.V. Yelmarty, S. Jutamulia, and Don A. Gregory, *J. Opt. and Laser Tech.* Vol. Vol. 21, 1989
36. "Highly Sensitive Polarization Controlled Optical Switching via a Photorefractive Double Phase Conjugator", Q.C. He, J.G. Duthie, and Don A. Gregory, *Opt. Lett.,* Vol. 14, No. 11, 1989
37. "Comparison of Detection Efficiencies for VanderLugt and Joint Transform Optical Correlators", F.T.S. Yu, Q.W. Song and Don A. Gregory, *Appl. Opt.,* Vol. 29, No. 2, 1990
38. "Rotationally Invariant Pattern Recognition With a Programmable Joint Transform Correlator", F.T.S. Yu, X.J. Li, E. Tam, and Don A. Gregory, *Appl. Opt.,* Vol. 28, No. 22, 1989
39. "Effects of Fringe Binarization on Multi-Object Joint Transform Correlation", F.T.S. Yu, F. Cheng, and Don A. Gregory, *Appl. Opt.,* Vol. 28, No. 15, 1989
40. "Nonconventional Joint Transform Correlator", F.T.S. Yu and Don A. Gregory, *Opt. Lett.,* Vol. 14, No. 17, 1989
41. "Neural Network Model Using Interpattern Association", T. Lu and Don A. Gregory, *Appl. Opt.,* Vol. 29, 1990
42. "Video MUX/DEMUX Single Modulator Joint Transform Correlator", J.A. Loudin, A.C. Hill, J.N. Duffey, W.M. Crowe, and Don A. Gregory, *Opt. Engr.* Vol. 29, 1990
43. "Joint Transform Correlation Using an Optically Addressed Ferroelectric Liquid Crystal Spatial Light Modulator", T.D. Hudson and Don A. Gregory, *Appl. Opt.,* Vol. 29, No. 8, 1990
44. "Video Rate Optical Correlation Using a Magneto-Optic Spatial Light Modulator", James C. Kirsch and Don A. Gregory, *Opt. Engr.,* Vol. 29, 1990
45. "Closed Loop Binary Phase Correction of an LCTV Using a Point Diffraction Interferometer", Don A. Gregory, E.C. Tam and F.T.S. Yu, *IEEE J. Photonics,* Vol. 2, No. 2, 1990
46. "Restoration of Images Blurred Due to Linear Motion", F. Cheng, F.T.S. Yu and Don A. Gregory, *Micro. Opt. Tech. Lett.,* Vol. 3, No. 1, 1990
47. "Optimum Storage and Speed for the Decomposition of Some Matrices", R. Adhami and Don A. Gregory, *J. Microcomputer Appl.* (ACCESS), June, 1990
48. "An Algorithm for Decomposing a Class of Matrices into Lower and Upper Triangular Matrices", R. Adhami and Don A. Gregory, *J. Franklin Inst.,* May, 1990
49. "Reconfigurable Interconnections Using Photorefractive Holograms", S. Wu, Q.W. Song and Don A. Gregory, *Appl. Opt.,* Vol. 29, No. 8, 1990

50. "Self Organizing Optical Neural Network", T. Lu, F.T.S. Yu and Don A. Gregory, *Opt. Engr.,* Vol. 29, No. 9, 1990
51. "Data Association Multiple Target Tracking", E. Tam, Don A. Gregory, and R.D. Juday, *Opt. Engr.,* Vol. 29, No. 9, 1990
52. "Infrared Signal Processing Using a Liquid Crystal Television", Don A. Gregory, *Opt. Engr.,* Vol. 30, No. 2, 1991
53. "Application of Hybrid Modulation Properties of the Liquid Crystal Television", Don A. Gregory, J.A. Loudin, James Kirsch, E. Tam, and F.T.S. Yu, *Appl. Opt.,* Vol. 30, No. 1, 1991
54. "Optical Neural Network with Pocket Size LCTV", F.T.S. Yu, T. Lu, X. Yang, and Don A. Gregory, *Opt. Lett.,* Vol. 15, No. 15, 1990
55. "Optical Correlator Guidance Demonstration", Don A. Gregory, *Mil. and Aero. Elect.,* December, 1990
56. "Nonlinear Response of Liquid Crystal Spatial Light Modulators", T.D. Hudson and Don A. Gregory, *Opt. Laser Tech.,* Vol. 22, No. 4, 1990
57. "Self Organizing Optical Neural Network for Unsupervised Learning", T. Lu, F.T.S Yu, and Don A. Gregory, *Opt. Engr.,* Vol. 29, No. 9, 1990
58. "Use of Electron Trapping Materials in Optical Signal Processing: Parallel Incoherent Image Subtraction", S. Jutamilia, G.M. Storti, W. Weiderman, J. Lindmayer, and Don A. Gregory, *Appl. Opt.,* Vol. 32, No. 5, 1993
59. "Image Classification by the Kittler-Young Transform", John Li, F.T.S. Yu and Don A. Gregory, *J. Micro. Opt. Tech.,* Vol. 4, No. 5, 1991
60. "Application of Moment Invariant Pattern Recognition to Optical Neural Networks", F.T.S. Yu, Y. Li, T. Lu, and Don A. Gregory, *Optik,* Vol. 89, No. 2, 1991
61. "Redundant Interconnection Interpattern Association Neural Networks", X. Yang, T. Lu, and Don A. Gregory, *Appl. Opt.,* Vol. 30, No. 35, 1991
62. "Automatic Target Recognition", by Mark Hewish, *Intl. Def. Rev.,* Vol. 5, 1991, Don A. Gregory (contributing author), "Optical Correlation"
63. "Color Holographic Storage in Lithium Niobate", F.T.S. Yu, Don A. Gregory, and S. Rajan, *Opt. Commun.,* Vol.81, 1991
64. "Photopolymer Hologram Formation", R. Adhami, D. Lanteigne, and Don A. Gregory, *Micro. Opt Tech. Lett.,* Vol. 4, No. 3, 1991
65. "Experiments in Nonlinear Joint Transform Correlators", B. Javidi, T.D. Hudson, and Don A. Gregory, *Appl. Opt.,* Vol. 30, No. 14, 1991
66. "Performance Characteristics of an Optically Addressed Ferroelectric Liquid Crystal Spatial Light Modulator", T.D. Hudson, K. Worchester, and Don A. Gregory*, Appl. Opt.,* Vol. 30, No. 20, 1991
67. "Optically Addressed Spatial Light Modulators", T.D. Hudson, and Don A. Gregory, *J. Opt. Laser Tech.,* Vol. 23, No. 5, 1991
68. "Full Complex Modulation Using Liquid Crystal Televisions as Spatial Light Modulators", Don A. Gregory and James C. Kirsch, *Appl. Opt.,* Vol. 31, No.2, 1992
69. "Design and Application of a Miniaturized Optical Correlator for Semi-Autonomous Navigation", M.S. Scholl and Don A. Gregory, *Opt. Engr.,* accepted for publication and withdrawn by authors due to institutional patent concerns, June, 1992
70. "Polychromatic Hybrid Neural Network", F.T.S. Yu and Don A. Gregory, *Opt. Commun.,* Vol. 88, No. 2, 1992

71. "Using the Hybrid Modulation Properties of Liquid Crystal Televisions", Don A. Gregory, J.A. Loudin, James C. Kirsch, E. Tam, and F.T.S. Yu, *Appl. Opt.,* Vol. 30, No. 11, 1991
72. "Effects of Thresholding in Joint Transform Correlation", Aris Tanone, C.M. Uang, F.T.S. Yu, E. Tam, and Don A. Gregory, *Appl. Opt.,* Vol. 31, No. 23, 1992
73. "Modulation Characteristics of the Epson Liquid Crystal Television", James C. Kirsch, Don A. Gregory and Brian Jones, *Opt. Engr.,* Vol. 31, No. 5, 1992
74. "Mirror Array Optical Interconnected Neural Network", F.T.S. Yu, X. Yang, S. Yin, and Don A. Gregory, *Opt. Lett.,* Vol. 16, No. 20, 1991
75. "Compact Joint Transform Correlation with a Thick Photorefractive Crystal", F.T.S. Yu, S. Wu, S. Rajan, and Don A. Gregory, *Appl. Opt.,* Vol 31, No. 14, 1992
76. "Phase Modulation in a LCTV Based Joint Transform Correlator", Don A. Gregory, James C. Kirsch, A. Tanone, P. Andres, and F.T.S. Yu, *J. Micro. Opt. Tech.,* Vol. 6, No.3, 1993
77. "Photo Compact Disk Based Optical Correlator", S. Jutamulia and Don A. Gregory, *Appl. Opt.,* Vol. 32, No. 26, 1993
78. "Intensity Compensation Filter for Joint Transform Correlation Peak Enhancement", F. Cheng, P. Andres, F.T.S. Yu and Don A. Gregory, *Appl. Opt.,* Vol. 32, No. 23, 1993
79. "Compact Joint Transform Correlator Using Electron Trapping Spatial Light Modulator", X. Yang, J. Lindmayer, C.Y. Wrigley, and Don A. Gregory, *Optik,* Vol. 93., No. 1, 1993
80. "Phase Modulation Depth for a Real-Time Kinoform", A. Tanone and Don A. Gregory, *Opt. Engr.,* Vol. 32, No. 3, 1993
81. "Three Dimensional Nanometer Structures", C. Chou and Don A. Gregory*, J. Micro. Opt. Tech.,* Vol. 6, No. 5, 1993
82. "Wavefront Splitting Interferometer for Measurement of Phase Modulation", Don A. Gregory and John L. McClain, *J. Micro. Opt. Tech.,* Vol. 8, No. 6, 1995
83. "Self-Organization of Scattering in Photorefractive Potassium Niobate into a Reconfigurable Hexagonal Spot Array", P. Banerjee, H.L. Yu, Don A. Gregory and N. Kukhtarev, *Opt. Lett.,* Vol. 20, No. 1, 1995
84. "Phase Conjugation, Edge Detection and Image Broadcasting Using Two beam Coupling in Photorefractive Potassium Niobate", P. Banerjee, H.L. Yu, Don A. Gregory, and N. Kukhtarev, *J. Opt. Laser Tech.,* Vol. 28, No. 2, 1996
85. "Wavelet Transforms Applied to Synthetic Aperture Radar", M. Sanghadasa, P.S. Erbach, C. Sung, Don A. Gregory and W. Friday, *Opt. Engr.,* Vol. 33, No. 7, 1994
86. "Optical Beam Steering Using an LCTV Panel", A. Tanone, F.T.S. Yu, and Don A. Gregory, *J. Micro. Opt. Tech.,* Vol.7, No. 6, 1994
87. "Multichannel Optical Correlator Based on a Mutually Incoherent Microlaser Array", X. Yang and Don A. Gregory, *Opt. Lett.,* Vol. 20, No. 23, 1995
88. "Diffused Matched Filter Storage in Photorefractive Optical Materials", Deanna McMillen, C. Zabel, P.S. Erbach, and Don A. Gregory*, Opt. Engr.,* Vol. 34, No. 8, 1995
89. "Basic Parameters for Miniature Optical Correlators Employing Spatial Light Modulators", X.J. Lu, C. Wrigley, and Don A. Gregory, *Opt. Engr.,* Vol. 35, No. 2, 1996
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134. "Field Modeling and Ray-Tracing of a Miniature Scanning Electron Microscope Beam Column", Jody Loyd, Jessica Gaskin and Don A. Gregory, *Microscopy*, vol. 66, October 2016
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Recent Patents:

"Real Time Optical Correlating System", US Patent #6999176, February, 2006
"Fiber Optic Liquid Mass Flow Sensor and Method", US Patent # 7,738,084, June 15, 2010
"Electrically Tunable Perfect Light Absorbers", Seyed Sadreddin Mirshafieyan and Don A. Gregory, patent pending

Other Patent Disclosures

"Solid State Directional Tracer Bullet", Valentin Korman and Don A. Gregory, submitted April 2012
"Star Tracking and Navigation Technique", Don A. Gregory and Valentin Korman, submitted February 2012

Theses and Dissertations Supervised:

Theses

1. "Distortion and Noise Invariant Optical Pattern Recognition", Dong Yu (1991)
2. "Spatial Light Modulator Nonlinearity", Tracy Hudson (1991)
3. "Liquid Crystal Televisions as Spatial Light Modulators", James Kirsch (1992)
4. "Effects of Dome Heating on Mid-Wave IR Sensor Noise", James Meehan (1993)
5. "Imaging Off-Axis Scattered Radiation", John Jackson (1994)
6. "Rewriteable Magneto-Optic Compact Disc Based Optical Processor", Travis Taylor (1994)
7. "Phase Correction in a Semiconductor Amplifier Array Using Fiber Optics", Paul Burke (1996)
8. "Ion Figuring of X-Ray Mirrors", Thomas Cantey (1997)
9. "Measurement and Optimization of the Spectral Reflection of Camouflage", Jody Loyd (1999)
10. "Ion Figuring of Non-Planar X-Ray Optics", Theodore Mooney (2000)
11. "Wavelet Focus Algorithm", Stephen Berry (2000)
12. "Optical Measurement of Liquid Mass Flow", Magnus Akerstrom (2001)
13. "Selective Emitter Design, Construction, and Testing", Bryan Jeanette (2002)
14. "Transmissometer Measurement and Testing", Carol Airhart (2004)

15. “Acoustic Transfer Functions”, Patrick Vitarius (2005)
16. “Transformation Properties of Aberrations in Optical Systems”, Raju Narayankar, (2005)
17. “Laser Ablative Propulsion using Polymers”, Adam Hendrickson, (2007)
18. “Strength of Glass Processed in a Vacuum”, Andrew Manning, (2007)
19. “Detection of Formaldehyde via Reactive Dye Fluorescence”, Kira Patty, (2008)
20. “Thermal Emitters as Space-Based Calibration Sources”, Denise Morell, (2008)
21. “Terahertz Imaging and Interference”, Martin Heimbeck, (2009)
22. “Measuring the Index of Refraction of Liquids”, Satya Kacharaju, (2011)
23. “Thin Film Mirror Metrology”, Kevin Spradley, (2011)
24. “Miniature Scanning Electron Microscope Simulation”, Stephanie Medley, (2012)
25. “Corrosion Detection and RFID Tags”, Emily Layden, (2014)
26. “Design, Construction, and Testing of an X-Ray Reflectometer”, Danielle Gurgew, (2015)
27. “Heat Deposition During Turbulence Induced Laser Irradiation”, William Dent, (2016)
28. “TeraOhm Resistance Standard Design, Construction and Testing”, Andrew Zollar, (2016)
29. “Modeling the Magnetic Field of a Radio Frequency Driven Coil Supporting a Xenon Plasma”, Christina Dent, (2017)
30. “Bidirectional Reflectance Distribution Function Measurements of Spectralon at 1.064μm”, William Walker, (2020)
31. “Polarized X-Ray Sources for Calibrating the IXPE Polarization Sensitive X-Ray Telescopes”, Samantha Johnson, (2020)

Dissertations

1. “Diffusion in the Formation of Photopolymer Holograms”, David Lanteigne (1992)
2. “Spontaneous Emission Alteration Near the 1-Dimentional Photonic Band Edge”, Mike Tocci (1994)
3. “Photoinduced Anisotropies in the Absorption and the Index of Refraction of Polymer Films”, Janine Reardon (1995)
4. “Supression of Photoinduced Absorption in Composite Nonlinear Materials”, David D. Smith (1995)
5. “Optical Wavelet Transforms”, Peter Erbach (1997)
6. “Amplitude and Phase in Optical Information Processing”, John McClain (1998)
7. “Diffused Holographic Information Storage”, Deanna McMillen (1999)
8. “Laboratory Simulation of Atmospheric Turbulence”, Travis Taylor (1999)
9. “Diffractive Optic Solar Concentrator”, Guolin Peng (2000)
10. “Real Time Holographic Display and Image Processing”, Amy Sue Kransteuber (2002)
11. “Three Dimensional Displays using Liquid Crystal Modulators”, James Kirsch, (2004)
12. “Molecular Contaminant Scattering in the Vacuum Ultraviolet”, Kenneth A. Herren (2005)
13. “Electro-optical Hybrid Slip Ring”, En Hong, (2005)
14. “Photonic Coherence Phenomena in Coupled Optical Resonators”, Hongrok Chang, (2006)

15. “Infrared Scene Projector”, Tommy Cantey, (2007)
16. “Optical Sensor for the Measurement of Density in a Flowing Multiphase Cryogenic Fluid”, Valentin Korman (2007)
17. “Vaporization and Shock Wave Dynamics for Impulse Generation in Laser Propulsion”, John Sinko (2008)
18. “Optical Correlation Based Pose Estimation”, John Outerbridge (2009)
19. “Differential Deposition Technique for Surface Figure Corrections in Grazing Incidence X-Ray Optics”, Kiranmayee Kilaru (2010)
20. “Polarimetry of Aerosols”, Prashant Raman (2012)
21. “Interferometric Mirror Metrology”, James T. Mooney (2013)
22. “Electron Optics in Miniature Scanning Electron Microscopes”, Jody Loyd (2014)
23. “Ultrathin Perfect Light Absorbers as Color Filters and Modulators”, Seyed Sadreddin Mirshafieyan (2017)
24. “Development of Low Stress, Broadband X-Ray Optic Multilayer Coatings”, Danielle Gurgew (2019)
25. “Digital Optical Correlator Alignment Monitoring System for Astronomical Telescopes”, Tomasz Lis (2020)
26. “Angle Scanning Spectropolarimetry”, Sahar Nouri (2020)

Current Graduate Student Advising:

Matthew Goforth and Shannon Baeske (supported with external private industry funding), Charles Davis (supported with external government funding), Scott Kaiser (supported with external government funding), Patrick Champey (employed with external government agency), Amanda Black Clark (employed with external government agency), Kirtan Dixit (supported with department funding)

Non-technical:

Member of Author’s Guild, New York, NY
Atlanta World War II History Round Table, Atlanta, GA
Minnesota Historical Society, St. Paul, MN
H-German/HistoryNet
Huntsville Literary Association
Romance Writers of America

Books Published, nonfiction—

Jungvolk, by Wilhelm R. Gehlen and Don A. Gregory, Casemate Publishing, Havertown, PA (2008).

Two Soldiers, Two Lost Fronts, by Don A. Gregory and Wilhelm R. Gehlen, Casemate Publishing, Havertown, PA (2009)

Hitler’s Home Front, by Wilhelm R. Gehlen and Don A. Gregory, Pen and Sword, Barnsley, South Yorkshire, Great Britain (2016)

After Valkyrie, by Don A. Gregory, McFarland Publishing, Jefferson, NC (2019)

Books Published, fiction—

Jenny B., Solstice Publishing, 2016
Bring the Curious Midwife, Solstice Publishing, 2018
Anne, the American Girl, Solstice Publishing, 2020
Anne, the American Woman, Solstice Publishing, 2020

Presentations—

"The Hitler Youth", Invited talk, Minnesota Historical Society (2009)
"Jungvolk", Invited talk, Huntsville Literary Association (2010)

Articles Published, nonfiction—

"Babe in Arms", *World War II Magazine*, November 2008

"Stalingrad Diary", *Military Illustrated* (UK), August 2009

"A BDM Girl Comes to America", *World War II History*, Vol. 13, no. 1, 2014

"The Lost Wehrmacht Pioneer", *World War II History*, Vol. 14, no. 3, 2015

"Growing Up a Girl in the Reich", *World War II History*, accepted for publication January 2020

Articles Published, fiction—

"The Thousand Year Paperclip", http://www.writersite.co.uk/Stories/Historical-Fiction/ThousandYear.htm

Other—

In studio guest appearance on the Joey Reynolds radio show at WOR New York. Topic: "Children in post-war Germany" (2010)

Summary:

- Chairman/advisor to completion of degree of 57 graduate students (26 Ph.D.'s, 31 MS with thesis). Successfully obtained continuous external private industry and government funding for a majority of the students graduated.
- More than 130 publications in a broad range of technical fields—in more than 30 different internationally circulated refereed journals. Greater than 150 additional published proceedings of technical meetings. h-index of 33 cumulative (accessed October 28, 2013) with 3336 citations. i10 index of 70

- Cited in standard optics reference and textbooks used worldwide:

  Fourier Optics, by Joseph Goodman, 2nd and 3rd edition, McGraw-Hill, 1988, Roberts and Company Publishers, 2004 and 2020 edition
  Optical Pattern Recognition, by F.T.S. Yu and S. Jutamulia, Cambridge University Press, 1998
  Introduction to Information Optics, by F.T.S. Yu, S. Jutamulia, and S. Yin, Academic Press, 2001
  Optical Signal Processing, Computing, and Neural Networks, F.T.S. Yu and S. Jutamulia, Krieger Publication Company, 2000
  Encyclopedia of Optical Engineering, Ronald Driggers, Mercel-Dekker Publishing, 2003
  Dynamic Behavior of Materials, by Selda Buyukozturk, Alexander K. Landauer, and Christian Franck, 2019
  Principles of Electron Optics, by Peter Hawkes and Erwin Kasper, 2nd Edition, 2018

- Department of the Army Research and Development Award

- Department of the Army Technical Transfer Award

- Promoted from GS-11 through GS-15 to GM-15 (civilian equivalent of full colonel) in the unprecedented span of seven years

- 1998 IEEE Donald Fink Prize for publication of the year in an IEEE journal, "Optical Pattern Recognition: Architectures and Techniques", F.T.S. Yu and Don A. Gregory, *IEEE J. Photonics,* Vol. 84, No. 5, 1996 (invited paper)

- Fourteen US patents granted

- Internationally recognized researcher in optical signal processing

- Original faculty member in UAH's Optical Science and Engineering Ph.D. program. Curriculum developer of Optics and Photonics MS (Physics) program

- UAH Dean's Service Award (2000)

- NASA Group Achievement Award (Propulsion Sensors) (2004)

- UAH Foundation Outstanding Teacher of the Year Award (2004)

- UAH College of Science leadership award for Science Olympiad (2007)

- NASA Group Achievement Award (Mass Flow Sensor) (2011)

- Four nonfiction books published by a traditional publisher, one other manuscript submitted
- Compensated guest lecturer, Minnesota Historical Society
- Compensated author of articles in World War II magazines
- Distinguished Professor of Physics, 2014
- Outstanding Graduate Student Advisor, 2018
- Careers of notable former graduate students:

  Mike Tocci, president, Contrast Optical Design and Engineering, Inc. Albuquerque, NM

  Valentin Korman, president, K-Sciences, Huntsville, AL

  John Sinko, Asst. Professor of Physics, St. Cloud State University, St. Cloud, MN (formerly visiting scientist, Nagoya University, Japan)

  Travis Taylor, Research Physicist, US Army Missile Command, Redstone Arsenal, AL, creator and co-star of National Geographic television series, *Rocket City Rednecks*

  Peter Erbach, Chief Scientist, Polaris Sensors, Huntsville, AL, developer and co-star of National Geographic television series, *Rocket City Rednecks*

  Satya Kachiraju, Lecturer in Physics, University of Texas, Pan American

  Guolin Peng, Apple Research Center, Cupertino, CA, formerly Chief Display Engineer, Rockwell Collins, Cedar Rapids, IA

  Deanna McMillen, Senior Optical Engineer, Zebra Imaging, Austin, TX

  En Hong, Senior Research Scientist, Corning Incorporated, Corning, NY

  Hongrok Chang, Research Scientist, Aegis Technologies, Huntsville, AL

  James T. Mooney, Chief Optical Scientist, Exelis Geospatial Systems, Rochester, NY

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Kiranmayee Kilaru, NASA Post-Doc., NASA Marshall Space Flight Center

Prashant Raman, Senior Design Engineer, ASML, Veldhoven, Netherlands

David D. Smith, Optical Physicist, NASA Marshall Space Flight Center

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