VITA
PHILLIP R. BROUSSARD

1. Home Address

Name	**Phillip R. Broussard**
Home Address	11325 Scenic Highway Lookout Mountain, GA 30750 USA
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2. Earned Degrees

Education	Ph. D., Applied Physics, Stanford University, Stanford, California (1987)
	M.S., Applied Physics, Stanford University, Stanford, California (1983)
	B.S., Physics, Louisiana State University, Baton Rouge, Louisiana (1981)

3. Professional Experience

July 2009–present	Professor, Department of Physics, Covenant College, Lookout Mountain, GA
January 2000–June 2009	Associate Professor, Department of Physics, Covenant College, Lookout Mountain, GA
October 1988-December 1999	Research Physicist, Materials Science and Technology Division, Naval Research Laboratory, Washington, DC
Post-doctoral Positions	Sept. 1986–Sept. 1988, National Research Council Post-doctoral fellow, Naval Research Laboratory, Washington, DC
Graduate Student Positions:	Stanford University: Research Assistant, 1982–1986
Undergraduate Student Positions:	Louisiana State University: Lab Assistant, 1977-1981

4. Courses Taught at Covenant College

Spring 2000	General College Physics II
	Circuits and Electronics
Fall 2000	General College Physics I
	Astronomy
	The Christian Mind: A Covenant Perspective
Spring 2001	General Physics for Scientists and Engineers I
	General College Physics II
	Optics and Modern Physics Lab
Fall 2001	Christian Mind: A Covenant Perspective
	General Physics for Scientists and Engineers II
	General College Physics I
Spring 2002	Circuits and Electronics
	Optics and Modern Physics Lab
	General Physics for Scientists and Engineers I
	General College Physics II
Fall 2002	Christian Mind: A Covenant Perspective
	General College Physics I
	Astronomy
Spring 2003	General College Physics II
	Optics and Modern Physics
Fall 2003	Christian Mind: A Covenant Perspective
	General College Physics I
	Physical Science
	Electromagnetism I(one student)
	Advanced Physics Laboratory (one student)
Spring 2004	General College Physics II
	Optics and Modern Physics Lab
	Astronomy(2 sections)
Fall 2004	Christian Mind: A Covenant Perspective
	Advanced Physics Laboratory
	General College Physics I
	Electromagnetism I
	Science Seminar (team taught)
	Perspectives on Science (team taught)
Spring 2005	General College Physics II
	Optics and Modern Physics Lab
	Astronomy
	Solid State Physics
Fall 2005	Christian Mind: A Covenant Perspective
	General College Physics I
	Physical Science
	Science Seminar (team taught)
Spring 2006	General College Physics II
	Optics and Modern Physics
	Astronomy
Fall 2006	Christian Mind: A Covenant Perspective
	Advanced Physics Laboratory
	General College Physics I
	Electromagnetism I
	Science Seminar (team taught)

Spring 2007	General College Physics II
	Optics and Modern Physics Lab
	Astronomy
	Thermodynamics
Fall 2007	Statics
Spring 2008	General College Physics II
	Optics and Modern Physics
	Advanced Physics Lab
	Biomedical Optics
Fall 2008	Christian Mind: A Covenant Perspective
	Introduction to Engineering
	Advanced Physics Laboratory
	General College Physics I
	Electromagnetism I
	Solid State Physics
	Science Seminar (team taught)
Spring 2009	General College Physics II
	Optics and Modern Physics
	Astronomy
	Science Seminar (team taught)
Fall 2009	Christian Mind: A Covenant Perspective
	Introduction to Engineering
	General College Physics I
	Astronomy
	Science Seminar (team taught)
Spring 2010	General College Physics II
	Optics and Modern Physics
	Astronomy
	Science Seminar (team taught)
Fall 2010	Introduction to Engineering
	General College Physics I
	General Physics for Scientists and Engineers II
	Advanced Physics Laboratory
	Electromagnetism I
	Science Seminar
Spring 2011	General College Physics II
	Optics and Modern Physics
	Dynamics
	Perspectives on Science (team taught)
	Science Seminar (team taught)
Fall 2011	Christian Mind: A Covenant Perspective
	Introduction to Engineering
	General College Physics I
	Astronomy
	Research in Physics
	Science Seminar (team taught)
Spring 2012	General College Physics II
	Optics and Modern Physics Lab
	Astronomy
	Statistical Mechanics
Fall 2012	Christian Mind: A Covenant Perspective

	General College Physics I
	Advanced Physics Laboratory
	Electromagnetism I
	Science Seminar
Spring 2013	General College Physics II
	Optics and Modern Physics Lab
	Astronomy
	Thermodynamics
	Science Seminar (team taught)
Fall 2013	Christian Mind: A Covenant Perspective
	General College Physics I
	Astronomy
	College Algebra
	Science Seminar (team taught)
Spring 2014	General College Physics II
	Optics and Modern Physics Lab
	Astronomy
	Science Seminar (team taught)
Fall 2014	Christian Mind: A Covenant Perspective
	General College Physics I
	Astronomy
	Science Seminar (team taught)
Spring 2015	General College Physics II
	Optics and Modern Physics Lab
	Astronomy
	Science Seminar (team taught)
Spring 2016	General College Physics II
	Optics and Modern Physics Lab
	Astronomy
	Science Seminar (team taught)
Fall 2016	Christian Mind: A Covenant Perspective
	General College Physics I
	Advanced Physics Laboratory
	Electromagnetism I
	Science Seminar
Spring 2017	General College Physics II
	Optics and Modern Physics Lab
	Science and Stewardship
	Science Seminar (team taught)
Fall 2017	Christian Mind: A Covenant Perspective
	General College Physics I
	Astronomy
	Science Seminar (team taught)
Spring 2018	General College Physics II
	Optics and Modern Physics Lab
	Science and Stewardship
	Science Seminar (team taught)
Fall 2018	Christian Mind: A Covenant Perspective
	General College Physics I
	Astronomy
	Science Seminar (team taught)

Spring 2019	General College Physics II
	Optics and Modern Physics Lab
	Science and Stewardship
	Science Seminar (team taught)
Fall 2019	Christian Mind: A Covenant Perspective
	General Physics for Scientists and Engineers II
	Astronomy
	Science Seminar
Spring 2020	General Physics for Scientists and Engineers I
	Optics and Modern Physics
	Circuits
	Science Seminar
Fall 2020	General Physics for Scientists and Engineers II
	Science and Stewardship
	Advanced Physics Laboratory
	Electromagnetism I
	Science Seminar
Spring 2021	General Physics for Scientists and Engineers I
	Optics and Modern Physics
	Statistical Mechanics
	Perspectives on Science
	Science Seminar
Fall 2021	General Physics for Scientists and Engineers II
	Science and Stewardship
	Quantum Mechanics I
	Science Seminar
Spring 2022	General Physics for Scientists and Engineers I
	Optics and Modern Physics
	Quantum Mechanics II
	Circuits
	Science Seminar
Fall 2022	General Physics for Scientists and Engineers II
	Science and Stewardship
	Science Seminar

5. Professional Activities

Honors/Awards

Phi Kappa Phi Honor Society, Louisiana State University chapter (elected, 1981)

Ken Morris Award, Physics Department, Louisiana State University (1981)

National Science Foundation Research Fellow, Sept. 1981-May 1983)

Outstanding Performance Rating, Naval Research Laboratory, Washington DC (1989 and 1993)

Memberships in Professional Societies

Professional Societies	American Physical Society

American Association of Physics Teachers
Christian Scientific Society
ALPha (Advanced Lab in Physics Society)

Conferences and Professional Meetings attended:

American Physical Society, Los Angeles, CA, March, 1983

American Physical Society, Detroit, MI, March, 1984

American Physical Society, Baltimore, MD, March, 1985

American Physical Society, Las Vegas, NV, March, 1986

Materials Research Society, Boston, MA, December, 1986

American Physical Society, New York, NY, March, 1987

The Metallurgical Society, Cincinnati, OH, October 1987

American Physical Society, New York, NY, March, 1988

Applied Superconducting Conference, San Francisco, CA, August 1988

Conference on the Science and the Technology of Thin film superconductors, Colorado Springs, CO, November, 1988

American Physical Society, Anaheim, CA, March, 1990

Conference on the Science and Technology of Thin Film Superconductors, Denver, CO, May, 1990

Materials Research Society, San Francisco, CA, March 1992

Applied Superconducting Conference, Chicago, IL, September 1992

American Physical Society, Seattle, WA, March, 1993

Materials Research Society, San Francisco, CA, March 1994

Applied Superconducting Conference, Boston, MA, October 1994

Materials Research Society, Boston, MA, March 1997

Materials and Mechanisms of Magnetism Conference, Miami, FL, November 1998

"Design, Self-Organization, and the Integrity of Creation", Seminars in Christian Scholarship, Calvin College, May, 2001

"Gordon Conference on Physics Research And Education: Electromagnetism", South Hadley, MA, June 2006

"Southeastern Section of the American Physical Society", Baton Rouge, LA, October 2010

"Southeastern Section of the American Physical Society", Roanoke, VA, October 2011

"Southeastern Section of the American Physical Society", Tallahassee, FL, November 2012

"Southeastern Section of the American Physical Society", Columbia, SC, November 2014

"Southeastern Section of the American Physical Society", Mobile, AL, November 2015

"Southeastern Section of the American Physical Society", Charlottesville, VA, November 2016

"Southeastern Section of the American Physical Society", Milledgeville, GA, November 2017

"Southeastern Section of the American Physical Society", Knoxville, TN, November 2018

"Southeastern Section of the American Physical Society", Wilmington, NC, November 2019

"Southeastern Section of the American Physical Society", Tallahassee, FL, November 2021

Training/Workshops

Vernier Software & Technology Computer and Graphing Calculator Workshop, Chattanooga, Spring 2007

Publications in Physics

(1) "*Electron-phonon scattering rates in antimony: RFSE*," *J. Phys. F* **12**, 67 (1982), (with T. C. OHara, and R. G. Goodrich).
(2) "*Specific heat of niobium-zirconium multilayers*," *Physical Review B* **30**, 4055 (1984), (with D. Mael, and T. H. Geballe).
(3) "*Critical fields of niobium-tantalum multilayers*," *Physical Review B* **35**, 1664 (1987), (with T. H. Geballe).
(4) "*Optical detection in thin granular films of Y-Ba-Cu-O at low temperatures between 4.2 and 100 K*," *Appl. Phys. Lett.* **51**, 2046 (1987), (with M. Leung, J. H. Claassen, M. Osofsky, S. A. Wolf, and U. Strom).
(5) "*Formation of the structure of the superconducting phase of La-Sr-Cu-O by DC sputtering*," *J. Cryst. Growth* **85**, 619 (1987), (with A. S. Edelstein, S. B. Qadri, R. L. Holtz, J .H. Claassen, T. L. Francavilla, D. U. Gubser, P. Lubitz, E. F. Skelton and S. A. Wolf).
(6) "*Superconductivity and structure in sputtered Nb-Ta multilayers*," *Physical Review B* **37**, 60 (1988), (with T. H. Geballe).
(7) "*Critical currents in sputtered Nb-Ta multilayers*," *Physical Review B* **37**, 68 (1988), (with T. H. Geballe).
(8) "*Film growth of high transition temperature superconductors*," *J. Crystal Growth* **91**, 340 (1988), (with S. A. Wolf).
(9) "*Temperature and field dependence of the critical current densities of Y-Ba-Cu-O films*," *Appl. Phys. Lett.* **53**, 1338 (1988), (with L. H. Allen, J. H. Claassen, and S. A. Wolf).
(10) "*Growth of niobium on sapphire*," in "*Metallic Multilayers and Epitaxy*" (edited by M. Hong, S. Wolf, and D. C. Gubser), *The Metallurgical Society.*, (1988), (with J. H. Claassen, S. B. Qadri and S. A. Wolf).
(11) "*High temperature superconducting thin films in Japan*," *ONRFE Sci. Info. Bul.* **13**, 1 (1988), (with M. S. Osofsky and E. Callen).
(12) "*Growth and characterization of evaporated thin films of* $Y_1Ba_2Cu_3O_x$," *J. Superconduct* **1**, 303 (1988), (with J. H. Claassen, C. R. Gossett, M. S. Osofsky, and W. T. Elam).
(13) "*Characterization of thin YBaCuO films grown by coevaporation*," *IEEE Trans. Mag* **25**, 2356 (1989), (with J. H. Claassen, and S. A. Wolf).
(14) "*Critical current density measurements of thin films of YBaCuO*," *IEEE Trans. Mag* **25**, 2345 (1989), (with L. H. Allen and J. H. Claassen).
(15) "*Microwave measurements on high Tc superconducting single crystals and films*," *IEEE Trans. Mag* **25**, 2394 (1989), (with W. W. Fuller, F. J. Rachford, W. L. Lechter, L. H. Allen, and J. H Claassen).
(16) "*Photoconductive response of granular superconducting films*," *IEEE Trans. Mag* **25**, 1315 (1989), (with U. Strom, E. S. Snow, R. L. Henry, J. H. Claassen, and S. A. Wolf).
(17) "*Heat capacity and transport measurements in sputtered niobium-zirconium multilayers*," *Physical Review B* **40**, 2321 (1989), (with D. Mael).
(18) "*Orientation relationships between niobium thin films and sapphire substrates*," *J. Less Common Metals* **155**, 327 (1989), (with S. B. Qadri, J. H. Claassen, and S. A. Wolf).

(19) "*Surface characterization of $YBa_2Cu_3O_{7-x}$ thin films supporting metallic and insulating overlayers*," *IEEE Trans. Mag.* **27**, 966 (1991), (with D. D. Berkley, and A. M. Ervin).

(20) "*Preparation of Thin Films of $Y_1Ba_2Cu_3O_{7-x}$ by magnetron sputtering techniques*," *IEEE Trans. Mag.* **27**, 1406 (1991), (with L. H. Allen, E. J. Cukauskas, and P. K. Van Damme).

(21) "*Boundary-condition effects on the superconducting transition temperature of proximity effect systems*," *Physical Review B* **43**, 2783 (1991).

(22) "*Fourier Transform Raman Spectroscopy of Superconducting $YBa_2Cu_3O_{7-\delta}$ Films on Strontium Titanate and Magnesium Oxide Substrates*," *J. Raman Spectr.* **22**, 639 (1991), (with H. D. Bist, T. Datta, T. S. Little, J. C. Thigpen, J. R. Durig, and D. D. Berkley).

(23) "*Off axis growth of $Y_1Ba_2Cu_3O_{7-y}$ on different substrates*," *Proceedings of the Materials Research Society* **275**, 507 (1992), (with V. C. Cestone).

(24) "*Modification of the x-ray photoemission spectrum of in situ deposited thin films of $Y_1Ba_2Cu_3O_{7-y}$ for various oxygen treatments*," *J. Vac. Sci. Tech. A* **11**, 3099 (1993), (with V. C. Cestone).

(25) "*$YBa_2Cu_3O_{7-y}/Y_2BaCuO_5$ composites: Growth and characterization*," *J. Appl. Phys.* **74**, 446 (1993), (with L. H. Allen, V. C. Cestone, and S. A. Wolf).

(26) "*Properties of superconductor-ferromagnet bilayers: $Y_1Ba_2Cu_3O_7$-Fe and $Y_1Ba_2Cu_3O_7$-Permalloy*" *Physical Review B* **47**, 15350 (1993), (with M. Rubenstein, P. Lubitz, W. E. Carlos, D. B. Chrisey, J. Horowitz, and J. J. Krebs).

(27) "*Characterization of thin film composite mixtures of $Y_1Ba_2Cu_3O_{7-y}$ and Y_2BaCuO_5*," *IEEE Trans. Appl. Super.* **3**, 1277 (1993), (with V. C. Cestone, L. H. Allen, and S. A. Wolf).

(28) "*A study of the proximity effect at oxide superconductor-normal metal interfaces*," *IEEE Trans. Appl. Super.* **3**, 1277 (1993), (with J. H. Claassen, V. C. Cestone and R. Hu).

(29) "*Effect of surface layers on ferromagnetic resonance in thin Fe films: Ni, Co, Si and $YBa_2Cu_3O_{7-\delta}$*," *J. Appl. Phys.* **75**, 5595 (1994), (with P. Lubitz, M. Rubenstein, D. B. Chrisey, and J. S. Horwitz).

(30) "*Resistivity anomaly in nonmagnetic metals with ferromagnetic insulator proximity layers*," *J. Appl. Phys.* **75**, 6679 (1994), (with G. M. Roesler, M. S. Osofsky, Y. U. Idzerda, and M. S. Osofsky).

(31) "*Magnetization-related transport anomalies in metal/ferromagnetic insulator heterostructures*," *J. Appl. Phys.* **76**, 6437 (1994), (with G. M. Roesler, M. E. Filipkowski, M. S. Osofsky, and Y. Idzerda).

(32) "*Experimental evidence of resputtering of the yttria layer in a $YBa_2Cu_3O_{7-x}/Y_2O_3/YBa_2Cu_3O_{7-}$ trilayer film*," *J. Appl. Phys.* **76**, 2380 (1994), (with G. L. Waytena, H. A. Hoff, C. L. Vold, J. H. Claassen, V. C. Cestone, and J. A. Sprague).

(33) "*Laser irradiation effects in $YBa_2Cu_3O_{7-\delta}$ thin films on metallic and single crystal substrates: a micro-Raman study*," *Physica C* **253**, 121 (1995), (with R.N. Stoni, H. D. Bist, G. S. Raghuvanshi, and J. Narayan).

(34) "*Characterization of thin film composite mixtures of $YBa_2Cu_3O_{7-\delta}$ and Y_2O_3*," *IEEE Trans. Appl. Super.* **5**, 1222 (1995), (with V. C. Cestone and L. H. Allen).

(35) "*Observation of a transverse voltage in the mixed state of YBCO thin films*," *IEEE Trans. Appl. Super.* **5**, 1717 (1995), (with T. L. Francavilla, E. J. Cukauskas, and L. H. Allen).

(36) "*Effect of Substrate Smoothness on the Microstructure of $YBa_2Cu_3O_{7-x}/Y_2O_3/YBa_2Cu_3O_{7-x}$ Trilayers*," *J. Electronic Mater.* **24**, 189 (1995), (with G. I. Waytena, H. A. Hoff, R. R. Wolcott Jr., C. L. Vold, and J. A. Sprague).

(37) "*Thin film composite mixtures of $YBa_2Cu_3O_{7-\delta}$ and Y_2O_3*," *J. Appl. Phys.* **77**, 252 (1995), (with V. C. Cestone and L. H. Allen).

(38) "*Direct observation of microscopic inhomogeneities in high T_c superconductors using energy-dispersive diffraction of synchrotron produced X-rays*," *SPIE* **2516**, 160 (1996), (with E.F. Skelton, S.B. Qadri, M.S. Osofsky, A.R. Drews, J.Z Hu,L.W. Finger, T.A Vanderah, D. Kaiser, J.L. Peng, S.M. Anlage, R.L. Greene, J. Giapintzakis).

(39) "*X-ray photoemission spectroscopy of $La_{0.67}Ca_{0.33}MnO_3$* ," *Applied Surface Science* **115**, 80 (1997), (with S.B. Qadri, V.M. Browning, and V. C. Cestone).

(40) "*Structural inhomogenieties in thin epitaxial films of $YBa_2Cu_3O_{7-\delta}$ and their effects on superconducting properties*," *Thin Solid Films* **308-309**, 420 (1997), (with S.B. Qadri, E.F. Skelton, V.C. Cestone, M.S. Osofsky, V.M. Browning, M.E. Reeves, and W. Prusseit).

(41) "*Atomic force microscopy studies of the surface morphology of annealed single crystal substrates and substrate annealing effects on the $YBa_2Cu_3O_{7-x}$ thin film growth*," *Electron Microscopy and Analysis* **153**, 205 (1997), (with Y C Fan, A G Fitzgerald, H C Xu, B E Storey , A O Tooke, and V C Cestone).

(42) "*Microscopic X-ray characterization of inhomogeneities in YBCO crystals with sharp superconducting transitions*," *Physica C* **282-287**, 93 (1997), (with S.B. Qadri, E.F Skelton, M.S. Osofsky, V.M. Browning, J.Z. Hu, M.E. Reeves, and W. Prusseit).

(43) "*Characterization of off-axis sputtered $La_{0.67}Ca_{0.33}MnO_3$ films and $La_{0.67}Ca_{0.33}MnO_3/YBa_2Cu_3C$ bilayers*," *Mat. Res. Soc. Symp. Proc.* **474**, 235 (1997), (with S.B. Qadri, and V. C. Cestone).

(44) "*Structural characterization of $YBa_2Cu_3O_{7-\delta}$ /Y_2O_3 composite films*," *J. Mat. Res.* **13**, 954 (1998), (with M.A. Wall, and J. Talvacchio).

(45) "*Investigation of granular films composed of interdispersed $La_{2/3}Ca_{1/3}MnO_3$ particles and metallic Au particles*," *J. Appl. Phys.* **83**, 7067 (1998), (with M. Rubinstein, L.H. Allen, K.B. Hathaway, M.M. Miller, J.Z. Sun).

(46) "*Measuring the spin polarization of a metal with a superconducting point contact*," *Science* **282**, 85 (1998), (with R.J. Soulen, J.M. Byers, M.S. Osofsky, B. Nadgorny, T. Ambrose, S.F. Cheng, C.T. Tanaka, J. Nowak, J.S. Moodera, A. Barry A, J.M.D. Coey).

(47) "*X-ray photoemission characterization of $La_{0.67}(Ca_xSr_{1-x})_{0.33}MnO_3$ films*," *J. Appl. Phys.* **85**, 5414 (1999), (with V.M. Browning, and V.C. Cestone).

(48) "*Andreev reflection: A new means to determine the spin polarization of ferromagnetic materials*," *J. Appl. Phys.* **85**, 4589 (1999), (with R.J. Soulen, Jr., M.S. Osofsky, B. Nadgorny, T. Ambrose, S.F. Cheng, J. Byers, C.T. Tanaka, J. Nowack, J.S. Moodera, G. Laprade, A. Barry and M.D. Coey).

(49) "*Measurement of the spin polarization of LaSrMnO*," *J. Appl. Phys.* **85**, 5567 (1999), (with M.S. Osofsky, B. Nadgorny, R.J. Soulen, Jr., M. Rubinstein, J. Byers, G. Laprade, Y. M. Mukovskii, D. Shulyatev, and A. Arsenov).

(50) "*Characterization of transport and magnetic properties in thin film $La_{0.67}(Ca_xSr_{1-x})_{0.33}MnO_3$ mixtures*," *J. Appl. Phys.* **85**, 6563 (1999), (with S.B.Qadri, V.M. Browning, and V.C. Cestone).

(51) "*Anomalous Behavior of Peak Resistance Temperature for Low x in As-Deposited $La_{1-x}Ca_xMnO_3$ Films on $NdGaO_3$ and $SrTiO_3$ Substrates*," *Mat. Res. Soc. Symp. Proc.* **574**, 181 (1999), (with V. C. Cestone).

(52) "*Highly spin-polarized chromium dioxide thin films prepared by chemical vapor deposition from chromyl chloride*," *Appl. Phys. Lett.* **76**, 3789 (2000), (with W.J. DeSisto, T.F. Ambrose, B.E. Nadgorny, and M.S. Osofsky).

(53) "*Origin of high transport spin polarization in $La_{0.7}Sr_{0.3}MnO_3$: Direct evidence for minority spin states*," *Physical Review B* **63**, 184433 (2001), (with B. Nadgorny, I.I. Mazin, M. Osofsky, R.J. Soulen, R.M. Stroud, D.J. Singh, V.G. Harris, A. Arsenov, and Ya. Mukovskii).

(54) "*Advances in the development of the magnetoquenched superconducting valve: Integrated control lines and a Nb-based device*," *J. Appl. Phys.* **91**, 1371 (2002), (with T.W. Clinton, and Mark Johnson).

(55) "*Pedagogical applications of the one-dimensional Schrödinger's equation to proximity effect systems: Comparison of Dirichlet and Neumann boundary conditions*," *Am. J. Phys.* **77**, 360 (2009).

(56) "*Proximity effect in Nb-Mo layered films: Transition temperature and critical current dependence on period*," *J. Appl. Phys.* **110**, 073196 (2011).

(57) "*Parallel Critical Field in Thin Niobium Films: Comparison to Theory*," *J. Low Temp. Phys.* **189**, 108 (2017).

(58) "*A Pedagogical Extension of the One Dimensional Schrödinger's Equation to Symmetric Proximity Effect System Film Sandwiches*," *AIP Advances* **12**, 015015 (2022), (with B.J. Luke).

Books Edited

(59) "*Superconducting Film Devices*," in "*Handbook of Thin Film Devices*," *Academic Press*, (2000), (with Maurice H. Francombe).

(60) "*Thin Films*," in "*Frontiers of Thin Film Technology*," *Academic Press*, (2001), (with Maurice H. Francombe, Colin E.C. Wood, A.G. Unil Perara, H.C. Liu, J. Douglas Adams, and Deborah Taylor).

6. Institutional Service

Departmental

Director, Engineering Dual Degree Program September 2001 – June 2013

Physics Department Chair, Fall 2019 – present

Miscellaneous

Faculty Forums	1) "A Reformed View of Fictionalism and Antirealism in the Sciences", April, 2004
Philosophy Club Talks	1) "A Reformed View of Fictionalism and Antirealism in the Sciences", Spring, 2004
Student organized forums	1) Climate Change, Feb. 25, 2008 2) Enviromental Panel, Feb 25, 2013
Outside Presentations	1) "Superconductivity: History, Phenomena and Applications", Presented at the Physics Department of Univ. of Tennessee at Chattanooga, October , 2005 2) "Superconducting Thin Film Research", Presented at the Physics Department of the University of the South, Sewanee, TN, December, 2012 3) "Superconducting Thin Film Research", Presented at the Physics Department of the University of North Florida, Jacksonville, GA, April, 2018

Sabbaticals	**Fall 2007**, mainly to work on paper on scientific realism, revamp Engineering program, and work on research in physics **Fall 2015**, research on thin film superconductivity and developing Lab science course on Technology
Leaves of absence	none
Grants obtained	Fall 2008: DMR-0820025 from the National Science Foundation in the amount of $178,935 , entitled "MRI: Acquisition of a Thin Film Growth and Characterization Lab for Undergraduate Education"

Committees

Member – Technology in Residence Committee, Fall, 2002 – Spring, 2003

Member – Information Technology Committee, Fall 2002 – Spring 2007, Fall 2009 – Spring 2015, Fall 2019-Spring 2022

Member – Faculty Steering Committee, Fall, 2002 – Spring 2012, Fall 2021

Member – MacLellan Scholars Committee, Fall, 2002 – Spring, 2005, Fall 2009 – Spring 2011

Member – Strategic Planning Committee, Fall 2004 – Spring 2006

Member–Intercultural Competency Committee, Fall 2007–Spring 2010, Fall 2011 – Spring 2013

Member–Social Committee, Fall 2012 – Spring 2015

Member–Faculty Status Committee, Fall 2014 – Spring 2019