Fred Barlow, Ph.D.

EDUCATION
Ph.D., Virginia Polytechnic Institute & State University, Blacksburg, Virginia, Electrical Engineering.
M.S., Virginia Polytechnic Institute & State University, Blacksburg, Virginia, Electrical Engineering.
B.S., Emory University, Atlanta, Georgia, Physics and Applied Physics.

EXPERIENCE
UNIVERSITY OF ALASKA ANCHORAGE
Professor, Electrical Engineering, Anchorage, AK, October 2018- 2019
Professor & Dean, College of Engineering, Anchorage, AK, July 2015- October 2018

UNIVERISTY OF IDAHO
NGeM Center Director, Moscow ID, April 2014 – July 2015
Micron Endowed Professor of Microelectronics, Moscow ID, April 2014 – May 2015
Department Chair, Electrical and Computer Engineering, Moscow, ID July 2012– May 2015
Professor, Moscow, ID August 2010 – July 2015
Associate Professor, Moscow, ID August 2006 – July 2010

UNIVERSITY OF ARKANSAS
Associate Professor, Fayetteville, AR, August 2003– August 2006
Assistant Professor, Fayetteville, AR, August 2000 – August 2003
Research Professor, Fayetteville, AR, July 1999 – August 2000

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Senior Research Associate, Blacksburg, VA. January 1999 – July 1999
Research Associate, Blacksburg, VA. January 1993 – January 1999
Research Assistant, Blacksburg, VA. January 1992 – January 1993

EMORY UNIVERSITY
Research Assistant, Atlanta, GA. Summer 1990
Laboratory Instructor, Atlanta, GA. August 1989 – May 1990

ACADEMIC ADMINISTRATIVE APPOINTMENTS
UNIVERSITY OF ALASKA ANCHORAGE
Dean, College of Engineering, Anchorage, AK, July 2015 – October 2018
Responsible for leadership of six departments, 45 faculty, 18 staff, an eight-million-dollar annual operating budget, $100 million in facilities, and nearly 1500 students.

UNIVERSITY OF IDAHO
Next Generation Microelectronics (NGeM) Center Director, April 2014 – May 2015
Founding director of this center which was established by a $1 million donation from Micron Technology, Inc. That donation established the Micron Endowed Professor of Microelectronics and I was the first recipient of that professorship. The center included faculty from electrical engineering, mechanical engineering, material science engineering, and mathematics.

UNIVERSITY OF IDAHO
Department Chair, Electrical and Computer Engineering, July 2012 – May 2015
Repsonsible for leadership of the electrical engineering and the computer engineering programs at the University of Idaho. With roughly fifteen faculty members and more than 300 students.

UNIVERSITY OF IDAHO
Research Coordinator for the College of Engineering, Fall 2011 – May 2012
Coordinated policies procedures and support for research within the college of engineering. Reported directly to the dean, and significantly expanded the support infrastructure that enabled research in the college.

UNIVERSITY OF ARKANSAS
Associate Department Head, Fayetteville, AR, August 2005 – August 2006
Responsible for course scheduling, student advising, and a range of administrative tasks.

NON-ACADEMIC EMPLOYMENT
TENNESSEE EASTMAN COMPANY
Assistant System Manager, Kingsport, TN, 1989
Maintained a mainframe computer system and revised a complex computer program written in Fortran. This system monitored the waste water treatment plant for a large chemical manufacturing facility and created a daily report including an array of performance metrics.

MAJOR ADMINISTRATIVE ACCOMPLISHMENT AS DEAN OF THE COLLEGE OF ENGINEERING

- Created the position of the Associate Dean of Research in the College of Engineering at University of Alaska Anchorage (UAA). This position reports to the dean and focuses on research policies & procedures as well as facilitation of research within the college.
- Hired twelve new faculty members in a diverse range of disciplines to maintain adequate staffing for the growing programs within the college. Part of that initiative included developing new policies and search documents that led to more diverse search pools and productive hiring processes.
- Hired two Alaska Native faculty members in coordination with the Alaska Native Science and Engineering Program (ANSEP). These two faculty members are civil engineers and they are the first Alaska Natives to serve on the faculty in the college.
- ABET, the international accreditor for engineering and computer science programs, evaluated five of the college’s programs in 2017 and all five of the programs received six-year accreditations. The Computer Science program at UAA received a visit from ABET evaluators in October of 2018. While the formal results have not been released, the visit was successful.

- Worked with the dean of engineering at University of Alaska Fairbanks (UAF) to establish the Joint Engineering Advisory Council (JEAC). This council is composed of industry professionals and the deans of engineering from UAA and UAF. The council works to foster collaboration and provided guidance with respect to engineering education in the state of Alaska.
- Significantly expanded community outreach:
  - Hired a K-12 Outreach Coordinator. This individual is an experienced teacher who worked for the Lower Kuskokwim School District (LKSD) in western Alaska. She now works on outreach for the college in a full-time capacity.
  - Initiated a Pre-Engineering Academy at Clark Middle School in Anchorage.
  - Worked with faculty and staff to expand the BP Summer Engineering Academies at UAA. For summer 2018, there were more than five hundred participants in this program.
  - Imitated dual enrollment courses with the Matanuska-Susitna Borough School District (MSBSD).
  - Established an articulation agreement for Project Lead the Way courses with the Anchorage School District (ASD).
- Developed a joint 2+2 chemical engineering program with Washington State University (WSU). This program enables Alaska residents to take the first two years of the chemical engineering curriculum at UAA and then the final two years at WSU. This agreement is an efficient way to provide access to this program at a reasonable cost and begin to correct the current deficit in qualified chemical engineers within the state.
- Established a joint Ph.D. program in engineering with UAF. This program allows students in Anchorage to obtain a Ph.D. in engineering while being co-advised by faculty from UAA and UAF. There is no requirement for students to be present in Fairbanks and therefore this program is designed to expand access to the Ph.D. degree for residents of south-central Alaska.
- Established a 2+2 program with UAF in Mining and Geological Engineering. Students can complete the first two years of these degrees in Anchorage and then they transition to Fairbanks for the last two years. Given the niche nature of these degrees this program is an efficient way to expand access to these programs at a reasonable cost.
- In response to the economic crisis that occurred in Alaska starting in roughly 2015, the college streamlined the curriculum from 26 programs to 17 programs. While this was a difficult collaborative process, the fall 2018 student credit hour (SCHR) production for the college was higher than for fall 2015. Economic conditions required us to eliminate several of our weaker programs and invested resources in our stronger programs. The result has been an overall growth in the college.
- Worked with faculty and university administrators to develop fast track master's degree programs in mechanical and civil engineering. While the college already offered master's degrees in these two disciplines, these new programs allow the top bachelor level students to apply some of their course work to the M.S. degree and therefore accelerate the completion of those degrees.
- Dramatically expanded degree awards in the college from 147 for the 2014-2015 academic year to 201 awards for the 2017-2018 academic year.
- Reorganized the college of engineering staff to provide better service to students and faculty, as well as gain efficiencies.

- Established differential tuition for the College of Engineering. Effective fall of 2016, students pay 20% additional tuition for engineering classes due to the higher cost associated with providing these programs.
- Developed a financially stable model for the college at a time of economic crisis in the University of Alaska system. In fiscal year (FY) 2015 the state supported roughly 54% of the cost of the college. For FY2018 that percentage was closer to 45%.
- Developed a new marketing campaign which included an overhaul of the college's web page, development of new marketing materials, and the creation of an active social media presence on Facebook and Instagram.
- Worked with the faculty at UAA and UAF to align the curriculum between the two institutions. The goal of this work was to facilitate the transfer of credit between the institutions.

COURSES TAUGHT

University of Arkansas

Number	Title	Semester	Evaluation
ELEG 3703	Electromagnetics	Fall 2000	NA
ELEG 5873	RF & Microwave Design	Spring 2001	NA
ELEG 5873	Advanced Microwave Design	Fall 2001	NA
ELEG 5273	Electronic Packaging	Fall 2001	Team Taught
ELEG 5873	Introduction to Microwave design	Spring 2002	4.8/5.0
ELEG 6273	Advanced Electronic Packaging	Spring 2002	Team Taught
ELEG 1003	Intro. To Electrical Engineering	Spring 2002	Team Taught
ELEG 1011	Engineering Success and Ethic	Spring 2002	1 hour class
ELEG 5873	Advanced Microwave Design	Fall 2002	4.9/5.0
ELEG 4062	Electrical Engineering Design Lab.	Fall 2002	4.3/5.0
ELEG 5273	Electronic Packaging	Fall 2002	Team Taught
ELEG 1003	Intro. To Electrical Engineering	Fall 2002	Team Taught
ELEG 4723	Intro. RF & Microwave Design	Spring 2003	4.6/5.0
ELEG 3703	Electromagnetics	Spring 2003	4.0/5.0
ELEG 6273	Advanced Electronic Packaging	Spring 2003	Team Taught
ELEG 5273	Electronic Packaging	Fall 2003	Team Taught
UAFS ELEG 3703	Electromagnetics	Fall 2003	2.7/5.0
	1st Semester of Experimental Distance Education Program to Fort Smith, AR Campus (UAFS)		
ELEG 5723	Advanced RF & Microwave Design	Spring 2004	4.9/5.0
ELEG 6273	Advanced Electronic Packaging	Spring 2004	Team Taught
ELEG 3703	Electromagnetics I	Fall 2004	4.3/5.0
	Distance education via Internet to Fort Smith Campus (UAFS).		
ELEG 4723	RF & Microwave Design	Fall 2004	4.4/5.0
ELEG 5723	Advanced RF & Microwave Design	Spring 2005	NA
ELEG 6273	Advanced Electronic Packaging	Spring 2005	Team Taught
ELEG 4061	Electrical Engineering Design Lab. I	Fall 2005	1 hour class
ELEG 4071	Electrical Engineering Design Lab. II	Fall 2005	1 hour class

University of Arkansas (continued)

Number	Title	Semester	Evaluation
ELEG 4061	Electrical Engineering Design Lab. I	Spring 2006	1 hour class
ELEG 4071	Electrical Engineering Design Lab. II	Spring 2006	1 hour class

University of Idaho

Number	Title	Semester	Evaluation
*ECE 404/504	Introduction to Electronic Packaging	Fall 2006	3.6/4.0
*‡ ECE 427	Power Electronics & Drives	Spring 2007	3.0/4.0
*ECE 404/504	Intro. to Electronic Packaging	Fall 2007	4.0/4.0
ECE 404/504	Intro. to Microelectronics Fabrication	Fall 2007	3.8 /4.0
*ECE 404/504	Intro. to Microelectronics Fabrication	Spring 2008	NA
*‡ ECE 427	Power Electronics & Drives	Spring 2008	3.65/4.0† 3.3/4.0§
*ECE 418/518	Introduction to Electronic Packaging	Fall 2008	4.0/4.0† 3.7/4.0§
*ECE 460	Introduction to Semiconductor Devices	Fall 2008	3.7/4.0† 4.0/4.0§
*ECE 418/518	Introduction to Electronic Packaging	Spring 2009	4.0/4.0† 3.7/4.0§
*‡ ECE 427	Power Electronics & Drives	Spring 2009	3.6/4.0† 3.3/4.0§
*ECE 460	Semiconductor Devices	Fall 2009	3.3/4.0† 3.8/4.0§
*‡ ECE 427	Power Electronics & Drives	Spring 2010	3/4.0† 3.7/4.0§
*ECE 460	Semiconductor Devices	Fall 2010	3.6/4.0† 3.7/4.0§
ECE 502	Directed Study (DS): Microwave Filter Design	Fall 2010	NA Ŧ
ECE 502	Directed Study: Microwave Design	Fall 2010	NA Ŧ
ECE 502	Directed Study: Thin Film Deposition	Spring 2011	NA Ŧ
ECE 502	DS: Advanced Microelectronic Packaging	Spring 2011	NA Ŧ
ECE 502	DS: Fab. & Measurement of Microwave Devices	Spring 2011	NA Ŧ
ECE 562	Semiconductor Theory	Spring 2011	4.0/4.0† 4.0/4.0§
*‡ ECE 427	Power Electronics & Drives	Spring 2011	3.5/4.0† 3.4/4.0§
ECE 330	Electromagnetics	Fall 2011	4.0/4.0† 3.5/4.0§
*ECE 460	Semiconductor Devices	Fall 2011	3.4/4.0† 3.4/4.0§
ECE 502	DS: Advanced Microelectronic Fabrication	Fall 2011	NA Ŧ
*ECE 427	Power Electronics & Drives	Spring 2012	2.8/4.0† 3.0/4.0§
*ECE 330	Electromagnetics	Summer 2012	4.0/4.0† 4.0/4.0§
ECE 398 / 598	Electrical Engineering Cooperative Internship	Fall 2012	NA Ŧ
ECE 398 / 598	Electrical Engineering Cooperative Internship	Spring 2013	NA Ŧ
ECE 398 / 598	Electrical Engineering Cooperative Internship	Summer 2013	NA Ŧ
*‡ ECE 427	Power Electronics & Drives	Summer 2013	4.0/4.0† 3.7/4.0§
*ECE 418/518	Introduction to Electronic Packaging	Fall 2013	NA

† Evaluation of Instructor's performance § Overall Course Evaluation
*Also offered as a U of I Engineering Outreach course section on a national / international basis via video. ‡ This course was dual listed with Washington State University. Ŧ The University of Idaho did not collect data for this course(s).

University of Alaska Anchorage

	Number	Title	Semester	Evaluation
EE	A441	Integrated Circuit Design	Spring 2019	
EE	A447	Power Electronics	Spring 2019	

MASTER'S DEGREE STUDENTS AS MAJOR ADVISOR

- Victor Wolemiwa, (Master of Engineering in ECE), December 2014.
- Avishesh Dhakal, (MSEE), Transient Liquid Phase Bonding for Die Attach in High Power, High Temperature Applications, May 2012.
- Brian Patterson, (MSEE), Ceramic Substrates for Use in High Power and High Temperature Applications, May 2012.
- Yuihin Tseung, (Master of Engineering in ECE), December 2011.
- Gona Venkata Seetha Rama Rao (MSEE), Encapsulation and Housing of Power Electronic Modules for High Temperature Applications, May 2010.
- Srikanth Kulkarni (MSEE), High Temperature Die Attach for SiC Power Devices, December 2010.
- "Integrated Motor Drive For 42v Automotive Auxiliary Motor Applications", Brian Rowden (MSEE), May 2005.
- Ranjith John (MSEE), Optimization of Thin Quad Flat Packages Using Design of Experiment Techniques, August 2006
- Mahitta Attaluri, Development of A Microwave System for Breast Tumor Detection, August 2006.
- Erica C. Elvey (M.S. MicroEP), Microvia fabrication Low Temperature Cofired Ceramics, 2004
- Michael A. Folk (MSEE), A Study of Embedded Passives in LTCC For RF And Microwave Applications, 2004
- Russell Morris (MSEE), Non-Thesis, 2004
- Minh Van (MSEE), LTCC based front-end receivers for 5 GHz WLAN applications, 2004
- Brian Charles Swift (MSEE), Wireless transmission of silicon probe data, 2004
- Kiran Vanam (MSEE), On Chip Thin Film Decoupling Capacitors, 2003
- Humayun Kabir (MSEE), High Q oscillator based on HTS spiral resonator for RF and microwave applications, 2003
- Venkat Rajagopalan (M.S. MicroEP), The study and characterization of copper electroplating thickness profile, 2003
- Li Jingfeng (MSEE), Study and design a multi-mode standard RF receiver, 2002
- Istak Ahmmed (MSEE), Design and packaging of an LTCC based 2.4GHz Bluetooth power amplifier, 2004
- Faisal Magableh (MSEE), LTCC based microwave filters for wireless and handheld products, 2004
- Jeremy Junghans, Spray Cooling of Power Electronics, December 2011.

MASTER'S DEGREE STUDENTS AS COMMITTEE MEMBER

- Trung Nguyen, January 2015, M. Engr.
- Paul Wilson, May 2012, M.S. EE, Time-Domain Quantum Simulation of Nanoscale Transistors

- Shams Arifeen, May 2012, M.S. ME
- Lee Fuller, December 2013, M.S. ME
- Fan, Nelson, December 2010, M. S.
- Mustafa Noor-E-Alam, December 2010, M. S.
- Branden Sudduth December 2010, M. Engr.
- Kent Bolton December 2010, M. Engr.
- Matthew Reeves December 2010, M. Engr.
- Ryan Stofferahn. May 2010, M. Engr.
- Amber Fowler, December 2010, M. Engr.
- Michael Cole, May 2009, M. Engr.
- Mike Roen, December 2008, M. Engr.
- Kevin Werhane, May 2008, M. Engr.
- Tarak Ram Ayalasomayajula, September 2008, M. Engr.
- Tsedeniya Abraham (MSEE), August 2006.
- Teuta Williams (MSEE), The Design of A 900MHZ Voltage-Controlled Oscillator in SOI CMOS, 2004
- Sandya Rani Bhaskara (M.S. Civil Eng.), Computer Modeling of The Spray Cooling Process to Achieve High Heat Removal, 2005.
- Matthew William Kelley (M.S. MicroEP), Modeling-based design optimization of wafer-level and chip-scale packaging for RF-MEMS devices, 2004
- Alan Leek (MSEE) non-Thesis
- Eric Anthony Decuir (M.S.), Characterization of Intersubband Transitions in Alxga1-Xn/Gan Multiple Quantum Well Structures: For Near Infrared Detector Applications, 2005
- Jianhua Mao, (MSEE), Applying artificial neural network to behavioral models of analog circuits, 2004
- Sri Ram Kumar Maddula (MSEE), Sizing electrolytic capacitors for induction motor drives, 2004
- Morris Wilson (MSEE), Design, simulation, layout, and characterization of a CMOS version of the Gilbert cell mixer, 2003
- Mohammad Omair Abbasi (MSEE), Analysis of aluminum enhanced lateral crystallization of hydrogenated amorphous silicon, 2003
- Raja Vigneshwar Kelambaakam (MSEE), Three-dimensional microwave imaging of breast cancer based on finite difference time domain method, 2004
- Tahir Muslih Ahmad (MSEE), High efficiency on-chip charge pumps, 2003.
- Nahid Sultana (MSEE), FEM modeling of strained quantum wells for the design of a far infrared photodetector, 2004.
- Hongjun Yao, (MSEE), Effect of Planarization of the Bottom Yttrium-Barium-Copper-Oxide Layer in the Multilayer Structure, 2001.
- Adrian Chan, (MSEE), Switch Capacitor Design and Characterization for Neural Electrochemistry, 2001.
- Chien-Chun Chen, (MSEE), A Sample-And-Hold Current Measurement Circuit for Neural Recording, 2003.

Ph.D. STUDENTS AS MAJOR ADVISOR

- Hongjun Yao, Ph.D. Physics, Investigation for surface resistance of yttrium-barium-copper-

oxide thin films on various substrates for microwave applications, 2002, Co-Advised with Professor G. Salamo of the Physics Department.
- Abdulla Ahmed Hasan Rabeea, Ph.D. EE, Design Methodology for Microstrip Dual-Mode Filters, May 2006.
- Kuldeep Saxena, Ph.D. EE, Development and fabrication of Microjet Array package using LTCC for IC cooling, August 2006.
- Kiran Kumar Vanam, Ph.D. EE, Development and Fabrication of Novel Packaging Methodologies Compatible with Spray Cooling of Power Electronics, September 2009.
- Brian Rowden, Ph.D. EE, Co-advised with Professor Balda (U of Ark), Large Area Dual Sided Spray Cooling for Power Converters, December 2010.
- Ehab K. Abousaif, Ph.D. ECE, Co-advised with Professor Elshabini, Design and Fabrication of Substrate-Integrated Waveguide Filters Using Low Temperature Co-Fired Ceramic, May 2012.
- Hossam Tork, Ph.D., ECE, Co-advised with Professor Elshabini, Zero Meta-Material Ferroelectric Phase Shifter Embedded inside LTCC, December 2012.

Ph.D. STUDENTS AS COMMITTEE MEMBER
- Ismail Cevek, Ph.D., EE, 2014.
- Hazem A. Aboutaleb, Ph.D., ECE, December 2013
- Jafar Al-Gharaibeh, Ph.D. CS, December 2012
- Ahmed Abdelnaby, Ph.D. ME, December 2013
- Stevan Hunter, Ph.D., EE, Idaho State University, December 2012
- Ali Mesgarani Ph.D., EE, December 2012
- Yangki Jung, Ph.D. Civil Engineering, Computer modeling of heat transfer of a MEMS based on micro-jet array air impinging cooling device, 2004.
- Khalil Hashem Sharif, Epitaxial Silicon Thin Films by Low Temperature Aluminum Induced Crystallization of Amorphous Silicon, 2005.
- James E. Webster, Ph.D. EE, Characterization and Mitigation of Charge-Induced Failure in Radio-Frequency Microelectromechanical (RF MEMS) Capacitive Switches, 2005.
- Eran Jones, Ph.D. MicroEP, Geometry and layering effects on the operating characteristics of integrated spiral inductors, 2005
- Chien V. Nguyen, Ph.D. EE, Neuroprobe: design, fabrication, and in vitro characterization of combined electrochemical and potential microelectrodes, 2004
- Roberto M. Schupbach, Ph.D. EE, Design of an energy storage unit for fuel-cell and hybrid-electric vehicles, 2004

COURSES DEVELOPED
University of Arkansas
ELEG 4723 RF & Microwave Design
ELEG 5723 Advanced RF & Microwave Design

University of Idaho
ECE 465/565 Introduction to Microelectronics Fabrication
ECE 418/518 Introduction to Electronic Packaging

BOOKS & BOOK CHAPTERS

- The Encyclopedia of Materials: Science and Technology, Chapter 6.10.4 “Electronic Packaging: Semiconductor Packages”, A. Elshabini & F. Barlow, Elsiever Science, Oxford, UK, 2001.
- Coombs' Printed Circuit Handbook, Chapter 3: Advanced Packaging, William Brown, Simon Ang, Fred Barlow, and Tarak Railkar, McGraw-Hill, August 27, 2001.
- Thin Film Technology Handbook, edited by, A. Elshabini and F. Barlow, McGraw Hill, 1998.
- "Film Deposition Techniques and Processes", F. Barlow, A. Elshabini, R. Brown, Chapter I, Thin Film Technology Handbook, edited by, A. Elshabini and F. Barlow, McGraw Hill, 1998.
- "Properties of Thin Film Materials", A. Elshabini, F. Barlow, Chapter III, Thin Film Technology Handbook, edited by, A. Elshabini and F. Barlow, McGraw Hill, 1998.
- "Design Guidelines for Thin Film Components and Construction of Thin Film Modules", A. Elshabini, F. Barlow, Chapter V, Thin Film Technology Handbook, edited by, A. Elshabini and F. Barlow, McGraw Hill, 1998.
- "Thin Film Materials and Processing", A. Elshabini and F. Barlow, Chapter IV, Handbook of Hybrid Microelectronics, Second Edition, Edited by C. Harper and J. Sergent, McGraw-Hill, Inc., 1994.
- “Ceramic Substrates”, by F. D. Barlow & A. Elshabini, Chapter 5, Advanced Electronic Packaging, Second Edition, R. Ulrick & W. D. Brown editors, 2006, IEEE Press.
- Ceramic Interconnect Technology Handbook, F. Barlow & A. Elshabini editors, 2007, Marcel Dekker Inc., NY, NY.
- “Packaging of High-Speed and Microwave Electronic Systems”, A. Elshabini, F. Barlow, Chapter 12, Electronic Packaging and Interconnection Handbook, Fourth Edition, edited by, Charles A. Harper, McGraw Hill, 2004.
- “RF and Microwave Packaging”, by F. D. Barlow & A. Elshabini, Chapter 12, Advanced Electronic Packaging, Second Edition, R. Ulrick & W. D. Brown editors, 2006, IEEE Press.
- “Multilayer Ceramics”, F. Barlow, A. Elshabini, & A. Kundusen, Chapter 6, Ceramic Interconnect Technology Handbook, Edited by F. Barlow and A. Elshabini, Marcel Dekker, 2007.

PUBLICATIONS

- Pin Jen Wang (Alvin), Sharmin Islam, Fred Barlow, and Aicha Elshabini (2016) Simulation and Measurement of Power Distribution Networks (PDN). International Symposium on Microelectronics: Fall 2016, Vol. 2016, No. 1, pp. 000368-000378
- L. L. Barannyk, H. A. Aboutaleb, A. Elshabini and F. D. Barlow, "Spectrally Accurate Causality Enforcement Using SVD-Based Fourier Continuations for High-Speed Digital Interconnects," in IEEE Transactions on Components, Packaging and Manufacturing Technology, vol. 5, no. 7, pp. 991-1005, July 2015.
- Barannyk, L.L.; Tran, H.H.; Nguyen, L.V.; Elshabini, A.; Barlow, F. Delay Estimation Using SVD-Based Causal Fourier Continuations for High Speed Interconnects. 2015 IEEE 24th Conference on Electrical Performance of Electronic Packaging and Systems, Oct. 25-28, 2015, San Jose, California, USA, 2015, pp. 225-228.
- Time Delay Extraction from Frequency Domain Data Using Causal Fourier Continuations for High-Speed Interconnects, Lyudmyla L. Barannyk, Hung H. Tran, Aicha Elshabini and Fred D. Barlow, Electronics 2015, 4(4), 799-826

- A Study of Differential Signaling: Stable and Accurate Mixed-Mode Conversion and Extraction of Differential S-Parameters, Hung Tran; Lyudmyla Barannyk; Aicha Elshabini; Fred Barlow, 2015 IEEE Workshop on Microelectronics and Electron Devices (WMED), Pages: 1 - 4
- "Causality Verification using Polynomial Periodic Continuations for Electrical Interconnects", Lyudmyla L. Barannyk, Hazem A. Aboutaleb, Aicha Elshabini, and Fred Barlow, Journal of Microelectronics and Electronic Packaging, Volume 11, Number 43, Fourth Quarter 2014
- Y. Wu, D. Nwoke, F. D. Barlow and C. C. Lee, "Thermal Cycling Reliability Study of Ag–In Joints Between Si Chips and Cu Substrates Made by Flux less Processes," in IEEE Transactions on Components, Packaging and Manufacturing Technology, vol. 4, no. 9, pp. 1420-1426, Sept. 2014.
- "Causality Enforcement of High-Speed Interconnects via Periodic Continuations", Lyudmyla L. Barannyk, Hazem A. Aboutaleb, Aicha Elshabini, and Fred Barlow, Proceedings of the IMAPS 2014 Conference, October 13-16, San Diego, CA, 2014.
- "Zero Meta-Material Ferroelectric Phase Shifter Embedded inside LTCC", Hossam S. Tork, Aicha Elshabini, Fred Barlow, Proceedings of the IMAPS 2014 Conference, October 13-16, San Diego, CA, 2014.
- "Finite Element Analysis and Fatigue Life Prediction of an Aluminum Alloy Braze for High Temperature Thermoelectric Generator Package Assembly", Shams U. Arifeen, Victor Wolemiwa, Dominic Nwoke, Lyudmyla L. Barannyk, Gabriel P. Potirniche, Aicha Elshabini and Fred Barlow, ASME 2014 International Mechanical Engineering Congress and Exposition, Volume 10: Micro- and Nano-Systems Engineering and Packaging, Montreal, Quebec, Canada, November 14–20, 2014
- "Modeling of Failure in Aluminum Alloy Braze for a High Temperature Thermoelectric Assembly", Shams Arifeen, Gabriel Potirniche, Aicha Elshabini, Fred Barlow, Proceedings of the IMAPS 2013 Conference, October 1-3, Orlando, FL, 2013.
- Aicha Elshabini, Fred Barlow, Sharmin Islam, and Pin-Jen Wang (2013), "Advanced Devices and Electronic Packaging for Harsh Environment". International Symposium on Microelectronics: FALL 2013, Vol. 2013, No. 1, pp. 000937-000950
- "Numerical Simulation of Silicon Wafer Warpage Due to Thin Film Residual Stresses", A. H. Abdelnaby, G. P. Potirniche, F. Barlow, and A. Elshabini, University of Idaho; S. Groothuis and R. Parker, Micron Technology, Inc, WMED 2013 Conference Proceedings, Boise, ID, pp. 9-12.
- "A New Method for Causality Enforcement of DRAM Package Models using Discrete Hilbert Transforms", H. Aboutaleb, L. L. Barannyk, A. Elshabini, and F. Barlow, University of Idaho, WMED 2013 Conference Proceedings, Boise, ID, pp. 21-24.
- "Comparison of Passive Enforcement Techniques for DRAM Package Models", D. Elgamel, L. Barannyk, A. Elshabini, and F. Barlow, University of Idaho, WMED 2013 Conference Proceedings, Boise, ID, pp. 25-28.
- "Tunable Ferroelectric Capacitors Embedded Inside LTCC", Hossam S. Tork, IMAPS Member, Hesham Tantawy, IMAPS Member, Aicha Elshabini, IMAPS Fellow, and Fred Barlow, IMAPS Fellow, Advancing Microelectronics, pp. 20-23, Vol. 40, No. 2, 2013
- "Tunable BaSrTiO3, BaZrTiO3 Ferroelectric Capacitors Embedded Inside Low Temperature

Cofired Ceramics (LTCC)", Hossam S. Tork, Military Technical College; Aicha Elshabini and Fred Barlow, University of Idaho, Journal of Microelectronics and Electronic Packaging, Volume 10, Number 3, Third Quarter 2013, pp. 95-101

- "Development of a SiC JFET-Based Six-Pack Power Module for a Fully Integrated Inverter", Fan Xu, Timothy J. Han, Dong Jiang, Leon M. Tolbert, Fred Wang, Jim Nagashima, Sung Joon Kim, Srikanth Kulkarni, Fred Barlow, IEEE Transactions on Power Electronics, pp. 1464-1478, March 2013, Vol. 28, No. 3.
- "Numerical Simulation of Heat Generation during the Back-Grinding Process of Silicon Wafers", A. H. Abdelnaby, G. P. Potirniche, A. Elshabini, F. Barlow, S.K. Groothuis, R. S. Parker, 2012 IEEE Workshop on Microelectronics and Electron Devices (WMED 2012) Proceedings, Boise, ID, April 20th, 2012, pp. 5-8
- "Evaluation of Direct Bond Aluminum Substrates for Power Electronic Applications in Extreme Environments", Brian Patterson, Aicha Elshabini, Fred Barlow, Proceedings of the Ceramic Interconnect and Ceramic Microsystems Technologies (CICMT) 2012 conference, Erfurt, Germany, April 2012, pp. 12-17.
- "Evaluation of Ceramic Substrates for High Power and High Temperature Applications", Srikanth Kulkarni, Shams Arifeen, Brian Patterson, Gabriel Potirniche, Aicha Elshabini, Fred Barlow, Proceedings of the Ceramic Interconnect and Ceramic Microsystems Technologies (CICMT) 2011 conference, PP 199-206 April 2011, San Diego, CA.
- "Waveguide Inductive Strip Filter Embedded in LTCC", Ehab Abousaif, A. Elshabini, and F. Barlow, Proceedings of the Ceramic Interconnect and Ceramic Microsystems Technologies (CICMT) 2011 conference, PP 43-49, April 2011, San Diego, CA.
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Capabilities", M.J. Murdock Charitable Trust, $410,789.00, Suat U. Ay, Thomas J. Williams, Mickey E. Gunter, Saied Hemati, David N. McIlroy, Fred D. Barlow, Indrajit Charit, Gabriel Potirniche, February 2015-August 2016

- Establishment of the Micron Endowed Professorship in Microelectronics at University of Idaho, Amount $1,000,000, Micron Foundation, April 2014
- "Acquisition of an Adaptive Computation Server for Support of STEM Research at the University of Idaho", Jim Alves-Foss, Lyudmyla Barannyk, Fred Barlow, Gabriel Potirniche, Daniele Tonina, Elowyn Yager, Marty Ytreberg, Tao Xing, 2014, M. J. Murdock Charitable Trust Amount $240,000, and NSF MRI, 2012, 9/1/2012- 8/30/2015, Amount: $428,600
- Grant, Micron Technology Foundation, Inc., PI: Fred Barlow, Co-I: Aicha Elshabini & Gabriel Potirniche, 1/1/2012-12/30/2013, Amount: $50,000
- "High Speed Digital Package Measurement and Modeling for Next Generation Memory Modules", Fred Barlow, Aicha Elshabini, Lyudmyla Barannyk, Gabriel Potirniche, Idaho IGEM Program, $150,000, June 2013- December 2014.
- Materials and Supplies Donation, Amount $900, Micron Technologies, Inc., March 2014
- "Packaging of High Temperature Thermoelectric Devices", PI: Fred Barlow, Co-I: Aicha Elshabini & Gabriel Potirniche, Sponsor: II-VI Foundation, 7/1/13-6/30/14, Amount: $96,374.69
- "Packaging of High Temperature Thermoelectric Devices: Assembly Methods", PI: Fred Barlow, Co-I: Aicha Elshabini & Gabriel Potirniche, Sponsor: II-VI Foundation, 7/1/12-6/30/13, Amount: $94,987
- Scholarship funding for Ph.D. Students from Egypt, Egyptian Military Technical College, 1/1/2009 – 12/30/2014, $282,443
- Grant, Micron Technology Foundation, Inc., PI: Fred Barlow, Co-I: Aicha Elshabini & Gabriel Potirniche, 1/1/2011-12/30/2012, Amount: $100,000
- "Packaging of High Temperature Thermoelectric Devices", PI: Fred Barlow, Co-I: Aicha Elshabini, Gabriel Potirniche, Sponsor: II-VI Foundation, 7/1/11-6/30/12, Amount: $96,086
- II-VI Foundation Equipment Grant, PI: Fred Barlow, Co-I: Aicha Elshabini, Gabriel Potirniche Sponsor: II-VI Foundation, 2011, Amount: $11,626.
- "Development of a Lead-Free Die and Substrate Attach for High Temperature SiC Packages", PI: Fred Barlow, Co-I: Aicha Elshabini, Sponsor: II-VI Foundation, 7/1/10-6/30/11, Amount: $96,086
- "Silicon Carbide Inverters Phase III", Sponsor: Global Power Electronics (GPE), Inc., Dec. 2009-Nov. 2010, $92,547, PI: F. Barlow, Co-Is: Gabriel Potirniche, Aicha Elshabini
- "Inertial Sensors Prototypes", PI: Fred Barlow, Co-I: Aicha Elshabini, Sponsor: MET Tech, Inc., 7/20/09-10/1/09, Amount: $24,692
- "Prediction and Monitoring Systems of Creep-Fracture Behavior of 9Cr-1Mo Steels for Reactor Pressure Vessels", Sponsor: 2009 Nuclear Energy University Program (NEUP), PI: Gabriel Potirniche, Co-I: Fred Barlow, Indrajit Charit, Karl Rink, 9/09-8/12, Amount: $557,279
- "Analysis of Substrate and Wire Bond Technologies for High Temperature SiC Packages", PI: Fred Barlow, Co-I: Aicha Elshabini, Sponsor: II-VI Foundation, 7/1/09-6/30/10, Amount:

$93,800

- "Silicon Carbide Inverters: Phase II", PI: Fred Barlow, Co-I: Aicha Elshabini, Sponsor: Global Power Electronics, June 2009-December 2009, Amount: $25,594
- "Electronic Packaging of SiC devices for High Temperature Operation", PI: Fred Barlow, Co-I: Aicha Elshabini, Sponsor: II-VI Foundation, 7/1/08-6/30/09, Amount: $67,000
- "Silicon Carbide Inverters", PI: Fred Barlow, Co-I: Aicha Elshabini, Sponsor: Global Power Electronics, 9/1/08-12/30/08, Amount: $37,614
- Grant, Micron Technology Foundation, Inc., PI: Fred Barlow, Co-I: Aicha Elshabini& Gabriel Potirniche, 6/1/2008-5/31/2011, Amount: $150,000
- "LTCC Packaging for Laser Diode Bars", PI: Fred Barlow, Co-I: Aicha Elshabini, Sponsor: Northrop Grumman, Funding Dates: 4/1/07 – 12/7/07, Amount: $61,000
- "High Temperature Packaging of SiC Devices", PI: Fred Barlow, Co-I: Aicha Elshabini, Sponsor: United States Department of Energy, Funding Dates: 7/1/2007 – 9/28/2007, Amount: $53,655
- "LTCC Packaging for Laser Diode Bars", Northrop Grumman Cutting Edge Optronics, F. Barlow PI, Aicha Elshabini Co-PI, $18,463, December 15, 2006-March 20, 2007.
- "High Temperature Packaging Study", Department of Energy Freedom Car Program, F. Barlow PI, Aicha Elshabini Co-PI. $150,000, December 1, 2005 – September 30, 2006.
- "Microvia in LTCC", Honeywell Federal Systems, F. Barlow, PI. $38,000, August 20, 2005 – September 20, 2005.
- "High Performance On-Chip Decoupling Capacitors", Integral Wave Technologies, Inc., F. Barlow, PI. Co-PIs: A. Elshabini, S. Ang, J. Parkerson, W. Brown, September 1, 2000- August 31, 2002, Amount: $262,000
- "Integrated Controllers for Automotive Auxiliary Electric Motors", Department of Energy, F. Barlow (P.I.), J. Balda, K. Olejniczak, 11/02- 10/03, $187,500
- "Incorporating Recent Developments into Mixed- Signal / Telecommunications Curriculum", NSF, H. A. Mantooth PI. Co-PIs: S. Ang, F. Barlow, 1/30/01-12/20/04, $409,671
- "Innovative Microwave Imaging System for Breast Cancer Detection", Arkansas Biosciences Institute (ABI), M. El-Shenawee (PI), F. Barlow (Co-PI), 1/21/04- 5/30/05, $134,200
- "Power Packaging of Spray-Cooled SiC Devices for High Temperature and High Voltage Operation", Office of Naval Research –DEPSCoR 04, Juan Balda (PI), F. Barlow, P. Selvam, A. Elshabini, 6/1/04 -5/31/07, $750,000
- "Wafer-Level and Chip-Scale Packaging (WL-CSP) of MEMS", NSF, A. J. Malshe (PI), F. Barlow (CO-PI), W. D. Brown (CO-PI), 2/1/05 - 1/31/07, $392,412
- "National Center for Reliable Electric Power Transmission (NCREPT)", Congressional Appropriation, H. Mantooth (PI), J. Balda, A. Elshabini, F. Barlow, 2/1/05- 12/31/05, $1,000,000
- "Characterization and Modeling of Embedded Passives In Low-Temperature Co-Fired Ceramic", International Microelectronics And Packaging Society, Mike Folk (Student Researcher), Fred Barlow (PI), October 2002 to October 2003, $15,000
- "DOD-DEPSCOR: Direct Cooling of Propulsion Drives", Office of Naval Research, Juan

Balda P.I. Co-PIs: F. Barlow, K. Olejniczak, A. Elshabini, S. Ang, 4/1/2001- 3/31/03, $365,000

- "Low Temperature Co-Fired Ceramic (LTCC) Training Program", Sponsor: Gintic, F. Barlow (P.I.), 5/28/02- 7/27/02, $10,000
- "Enhancing Prototyping Capabilities for Electric Propulsion Research at the University of Arkansas", DURIP ONR Grant No. N00014-00-1-0536, $90,000, J. Balda, F. Barlow, A. Elshabini, K. Olejniczak, S. Ang

HONORS AND AWARDS

- Dr. Barlow was the 2011 recipient of the John A. Wagnon Technical Achievement Award from the International Microelectronics And Packaging Society (IMAPS), http://www.imaps.org/awards/recipients/awardwagnon.htm
- In 2009 Dr. Barlow was awarded the status of Fellow of the Society by the International Microelectronics And Packaging Society (IMAPS), http://www.imaps.org/awards/recipients/awardfellow.htm
- Outstanding Teacher Award 2002-2003, University of Arkansas, Department of Electrical Engineering.
- Outstanding Service to Students Award 2005-2006, University of Arkansas, Department of Electrical Engineering.
- The George Abraham Outstanding Paper Award for, "3D Packaging for High-Density Processing", P. Sangree, W. Marsh, G. Bates, M. Lucas, L. Schaper, F. Barlow, K. Gray, And G. Cochrane, GOMAC 2001.
- 1997 International Microelectronics And Packaging Society (IMAPS) Technical Achievement Award.
- International Society for Hybrid Microelectronics Educational Foundation Grant 1994 / 1995. "Wideband Electrical Characterization of Materials Used in MCM Applications".
- International Society for Hybrid Microelectronics Educational Foundation Grant 1993 / 1994. "Thick Film Cerium Oxide Buffer Layers for High Temperature Superconductors".
- Army Fellowship for Nondestructive Evaluation of High Temperature Superconductors. Summer 1993.

MAJOR COMMITTEE ASSIGNMENTS & UNIVERSITY SERVICE

- Chair of the Search Committee for the Dean of the College of Business and Public Policy (CBPP), University of Alaska Anchorage, (2017-2018). Resulted in the hiring of Karen Markel as the dean of CBPP.
- Member of the Search Committee for the Director of Alumni Engagement, University of Alaska Anchorage, (2017-2018). Resulted in the hiring of Christina Teaford as the new director.
- Member of the Search Committee for the Chancellor of the University of Alaska Anchorage, (2017-2018). Resulted in the hiring of Cathy Sandeen as the chancellor.
- Member of the Planning and Budget Advising Council, University of Alaska Anchorage, August 2016- 2018.
- Member of the system wide Strategic Pathways Committee on Engineering Education in Alaska, 2016-2017.

- Member of the selection committee for the ConocoPhillips Arctic Science and Engineering Award, University of Alaska Anchorage, 2015-2018.
- Research Task Force (2015-2016), University of Alaska Anchorage
- Academic Planning Working Group (2015), University of Alaska Anchorage
- Chair of the 2014-2015 search committee for the University of Idaho Civil Engineering Department Chair. Resulted in the hiring of Patricia Colberg as the department chair.
- University of Idaho Seed Grant Proposal Review Committee, 2014
- University of Idaho General Education Assessment Committee, 2013-2015
- Chair of the ECE Clinical Faculty Member Search Committee, Summer 2014
- Chair of the ECE Signal and Power Integrity Faculty Search Committee, 2013-2014
- Chair of the ECE Analog Electronic Search Committee, Spring 2013
- Chair of the ECE Clinical Faculty Member Search Committee, Summer 2013
- Committee chair for 2012-2013 ECE administrative assistant search
- Member of the College Research Writer Search Committee, Summer 2013
- University Radiation Safety Committee, Spring 2013-2015
- College level Tenure and Promotion Committee, Fall 2012
- Research Coordinator for the College of Engineering Fall 2011 and Spring 2012
  - Member of the 2011-2012 University of Idaho Associate Dean's Group
  - Supervised College Pre-Award Research Staff
  - Assisted Dean in establishing structure for pre-award staff
  - Chair of the search committee for college Research Writer position.
  - Coordinated Several Major Proposal Efforts: 2012 NSF Noyce, 2012 NSF MRI, 2012 NSF IGERT
  - Responsible for research content in monthly College of Engineering news letter
  - Chair of 2012 "President's Mid-Career Awards" Committee
  - Drafted a policy for general engineering, ENGR, courses.
  - Coordinated 2012 F&A space survey for College of Engineering
  - 2011-2012 NASA EPSCOR Advisory Council Member
  - Spring 2012 University Special Lab & Course Fee committee member
- Fall 2011 & Fall 2012 University of Idaho Commencement Marshal
- Chair of College Level Promotion & Evaluation Process Committee, Fall 2012-Spring 2013
- External member for the 2011 University of Idaho Material Science Engineering Tenure & Promotion Committee.
- Fall 2009- Spring 2012 University of Idaho Faculty Senate Member, Representing the College of Engineering
- University of Idaho, College of Graduate Studies Dean search committee 2010-2011
- 2007-2008 Physics Search Committee, University of Idaho
- 2007-2012 ABET ECE Committee, University of Idaho

- 2007 ECE Faculty Search Committee, University of Idaho
- Electrical Engineering Laboratory Committee, University of Arkansas
- Telecommunications Committee, University of Arkansas
- Electronics & Circuits Committee, University of Arkansas
- Undergraduate Curriculum Committee, University of Arkansas

NATIONAL & INTERNATIONAL SERVICE

- ABET Academic Advisory Council, 2015-2018
- Editor-in-Chief of the Journal of Microelectronics and Electronic Packaging, Fall 2006-July 2012.
- DOE Office of Vehicle Systems Merit Reviewer, 2008 & 2009.
- External evaluator for Electrical Engineering Program at Fairfield University, Fairfield, CT, 2007.
- External Dissertation Reviewer, “Fabrication of Advanced LTCC Structures For Microwave Devices”, Timo Tick, Department of Electrical and Information Engineering and Infotech Oulu, University of Oulu, Oulu, Finland
- External Dissertation Reviewer, “Embedding of Bulk Piezoelectric Structures in Low Temperature Co-fired Ceramic”, Maciej Sobocinski, Department of Electrical and Information Engineering and Infotech Oulu, University of Oulu, Oulu, Finland, 2014

PROFESSIONAL AND SCHOLARLY SERVICE

- IMAPS, John A. Wagnon Award Selection Committee, 2012, 2013, and 2014
- Technical Program Committee and Session Chair, CICMT 2012 Conference, Erfurt, Germany, April 2012.
- Member of the Program Committee for the 2011 SPIE conference "Smart Sensors, Actuators and MEMS", 18 - 20 April 2011, Prague Czech Republic
- IMAPS Poland 2010 Technical Committee Member
- 2011 IMAPS “Fellow of the Society Award” Selection Committee Member
- 2010 IMAPS “Fellow of the Society Award” Selection Committee Member
- IMAPS Poland 2009 Technical Committee Corresponding Member
- IMAPS 2008 Technical Committee Member
- Session Chair for “Packaging for Extreme Environments”, 2008 IMAPS Conference
- IMAPS-CPMT Poland 2008 International Scientific Committee Member
- Member of the Program Committee: SPIE conference “Smart Sensors, Actuators and MEMS” to be held in Dresden Germany, May 2009
- Session Chair for IMAPS CICMT 2008 Conference, Munich, Germany, April 2008.
- IMAPS 2007 Best Paper of Conference Committee Member
- Session Chair for IMAPS CICMT 2007 Conference, “ADVANCED PACKAGING TECHNOLOGY I”, April 2007, Denver, CO.

- Session Chair for IMAPS CICMT 2007 Conference, "Pb-Free I", November 2007, San Jose, CA.
- IMAPS- Poland 2007 International Scientific Committee Member
- Chairman of the IMAPS Web Development Committee, 1998 and 1999.
- Member of the IMAPS Power Electronics Packaging National Committee, 1997 – 2003.
- Member of the IMAPS Microwave Packaging National Committee, 2003- 2008.
- Member of the IMAPS Extreme Environments Packaging National Committee, 2008-2011.
- Actively involved in the preparation of IMAPS publications in a CD-ROM format.
- Responsible for the development of an Internet Home Page for the International ISHM society 1995 - 1999.
- ASM Int., Electronic Materials and Processing Division, Council Member, 1996.

PROFESSIONAL AFFILIATIONS

- International Microelectronics & Packaging Society (IMAPS), Fellow
- Institute of Electrical and Electronic Engineers (IEEE), Senior Member

PAPER REVIEWS

- Reviewer for IEEE Transactions on Power Electronics, 2013.
- Reviewer for Microelectronics Engineering, Journal, 2011.
- Reviewer for Elsevier Inc, Applied Surface Science, Journal, 2010.
- Reviewer for Journal of the American Ceramic Society, 2010
- Reviewer for Journal of the European Ceramic Society, 2015
- Reviewer for Microsystem Technologies Journal 2009.
- Reviewer for IEEE Surface and Interface Analysis Journal 2009.
- Reviewer for IEEE Transactions on Components and Packaging Technologies, 2009, 2013-2015.
- Reviewer for Elsevier Inc, Microelectronics Reliability Journal, 2008 & 2009.
- Reviewer for Sensors and Actuators A. Physical, 2008.
- Reviewer for IEEE Transactions on Advanced Packaging, 2004, 2005, 2006, 2008, 2009.
- Reviewer for IEEE Transactions on Electronics Packaging Manufacturing, 2005 / 2006.
- Reviewer for InterPack 2005 Conference.
- Reviewer for TCAD 2002 Conference

COMMUNITY SERVICE

- Member of the Anchorage International Rotary Club, 2016- 2019.
- Member of the Moscow Idaho Rotary Club, 2008-2011.
- Member of the Rotary Veterans Memorial Pavilion (Palouse Ice Rink) 2009-2011 Board of Directors.