

Michael Gerard Pecht

Professional Engineer

EDUCATION

Ph.D. Engineering Mechanics (1982); M.S. Engineering Mechanics (1979); M.S. Electrical Engineering (1978); B.S. Acoustics-Physics (1976); Univ. of Wisconsin, Madison.

EXPERIENCE

Faculty: George E. Dieter Chair Professor in Mechanical Engineering (1983–present), Professor of Applied Mathematics, Statistics and Scientific Computation (2008–present), and Professor in Systems Engineering at the University of Maryland (1990–1994). Adjunct Professor in Risk Management at Yokohama National University (2016), Professor of Electrical Engineering at City University of Hong Kong (2008–2010). Visiting Professor in Reliability Engineering at Beihang University—China (2005–2013). Visiting Professor in Physics at Shanghai—JiaoTong University (2004–2007). Managed over 200 programs funded by both government and industry. Developed 12 courses associated with electronics products and systems, and prognostics and systems health management, authored more than 30 books, and graduated over 100 M.S. and 60 Ph.D. students.

Founder and Director: Center for Advanced Life Cycle Engineering (CALCE), having consortia in both Electronic Products and Systems, and Prognostics and Health Management, and supported by over 150 industry and government members, with a budget of over \$6 million/yr, and graduating over 30 M.S. and Ph.D. students per year.

National Academy of Science/Engineering (NAE/NAS) Committees (invited to participate): Committee for reliability growth; Committee to investigate printed circuit board manufacturing in the U.S.; Committee to examine research needs in materials engineering; Committee to investigate automotive sudden acceleration and reliability (gave presentation but declined to participate).

Expert for Congressional Investigations: Committee on Energy & Commerce to investigate automotive reliability issues: Toyota sudden acceleration (2009–2010); and GM ignition – air bag recalls and NHTSA responses (2014).

FDA Expert: Taught reliability and aided FDA in assessing the reliability capability maturity assessment of manufacturers of medical devices, the techniques used to qualify devices, and medical device reliability and safety. (Sept. 2007–Sept. 2008)

Editor in Chief:

- Circuit World (2019–present)
- IEEE Access (2012–2018): first editor of the journal; 2015 PROSE Award winner in the subject category of “Journal/Best New STM (Scientific, Technical, and Medical)”. Selected for Thomson Reuters Science Citation Index in 2015.
- Life Cycle Reliability and Safety Engineering, Springer (2012–present)
- Microelectronics Reliability, Elsevier (1996–2012)
- International Journal of Performability Engineering (2009–2012)
- IEEE Transactions on Reliability (1988–1997)

Vice President: PASS Inc., Initiated programs under both U.S. Army and Air Force contracts to determine the storage reliability of electronic equipment and to develop assessment methods for long term storage and dormancy reliability. Resigned as Vice President but still serves as a consultant (company is now called ERS Inc.) (1990–1993)

Vice President: Ramsearch Inc., Established company and awarded \$1.5M to develop a concurrent electrical engineering decision support system. Won contracts to research temperature-dependent IC failures. Was bought out in 1991. (1988–1991)

Scientist: Engineering Research Center, Madison, WI: Worked on reliability assessment of Astro I Space Telescope. (1983)

Civil Service Electronics Technician: High Energy Physics at the University of Wisconsin and at the National Accelerator Laboratory in Batavia, Illinois. Developed electronics instrumentation. (1971–1975)

Selected Research and Organizational Accomplishments

- 2017, Chairman for IEEE 1856, “Standard Framework for Prognostics and Health Management (PHM) of Electronic Systems”. This standard describes a normative framework for classifying PHM capability and for planning the development of PHM for an electronic system or product.
- 2012, Selected to be the Editor in Chief of the new IEEE Access journal. This journal was awarded the 2015 PROSE Award in the subject category of “Journal/Best New STM (Scientific, Technical, and Medical).” Grew the journal to revenues of over \$8M per year by 2018.
- 2010, Established a battery health management and prognostics research program at CALCE, with over \$1M funding from NSF, U.S. Navy, and the CALCE members.
- 2008, Initiated prognostics and system’s health management research at the City University of Hong Kong and within southern China. Received over US \$3M in grant funding from the Hong Kong government.
- 2007, Established the CALCE Prognostics and Health Management Consortium at the University of Maryland. This was the first diagnostics, prognostics, and system health management consortium for electronics in the world.
- 2005, Developed a new paradigm for reliability prediction of electronics based on prognostics, whereby sensor data can be integrated with models that enable in-situ assessment of the deviation or degradation of a product from an expected normal operating condition and the prediction of the future state of reliability. Developed prognostics roadmap for inclusion in the ITRI semiconductor roadmap.
- 2005, Chairman for IEEE Organizational Reliability Capability Standard 1624, which defines the reliability capability of organizations and identifies the criteria for assessing the reliability capability of an organization.
- 2004, Developed the concept of physics-of-failure for electronics reliability and the Failure Modes, Mechanism and Effects Analysis (FMMEA), which became formalized in a series of JEDEC Standards, including: JEDEC-STD-148, titled “Reliability Qualification of Semiconductor Devices Based on Physics of Failure Risk and Opportunity Assessment;” JESD34, titled “Failure-Mechanism-Driven Reliability Qualification of Silicon Devices;” JESD47, titled “Stress-Test Driven Qualification of Integrated Circuits;” and JESD94, titled “Application Specific Qualification Using Knowledge Based Test Methodology.”
- 2002, Established electronics prognostics and health monitoring program at CALCE Electronic Products and Systems Center. Developed prognostics and physics-of-failure techniques to prove (under 2 NASA contracts) that the electronics on a NASA space shuttle robot arm and on NASA booster rockets can survive additional missions after the completion of the 2001 designed-for life. This was used to certify future missions.
- 2002, Chairman for IEEE Reliability Prediction Assessment Guidebook #1413.1 (1999–2002).
- 2001, Established \$4M lead-free electronics research program at CALCE. This was the only research program to assess the long-term (6 years +) reliability of lead-free devices and products.
- 1999, Established CALCE Electronic Products and Systems Center as the first academic research facility in the world to be ISO 9001 certified.
- 1999, Developed Pecht’s Law, which provides an estimate of semiconductor device reliability trends and the requirements for accelerated testing.
- 1998, As IEEE chairperson, led the development of both the IEEE #1332 Reliability Program Standard, and IEEE #1413 Standard Methodology for Reliability Prediction and Assessment for Electronic Systems and Equipment. Received IEEE Standards Award in 2000.
- 1997, Developed the concept of “up-rating”, which is the process to assess the capability of semiconductor devices to meet functionality and performance requirements outside the manufacturers’ specification. The up-rating approach was institutionalized into IEC/PAS 62240: Use of Semiconductor Devices Outside Manufacturers’ Specified

Temperature Ranges, Edition 1, 2001; as well as GEIA 4900, 2001, and is currently used for all commercial avionics systems.

- 1996, Led program to develop production-quality design and reliability assessment methods and software used by Texas Instruments, Westinghouse, AlliedSignal, Lockheed, and Rockwell International.
- 1995, Won \$4.8M in NSF contracts to enhance the research and educational programs in electronic products and systems development.
- 1995, Modeled IC endurance and assessed the risks of replacing ceramic IC packages with plastic packages for avionics and military applications. The studies (and book “Plastic Encapsulated Microcircuits” John Wiley Publishing), were fundamental to the use of plastic encapsulated microcircuits for the Boeing 777 and for the general use of commercial parts in military and aerospace applications.
- 1995, Formalized the concept of the physics-of-failure of electronic components, a methodology which includes modeling root-cause failure mechanisms and the impact of defects and loads on product reliability.
- 1993, Designed and fabricated an opto-electronics semiconductor package for the automotive industry (with Dr. David Bigio).
- 1992–1994, Guided the U.S. DoD to reform the military reliability standards, which led to the “Perry Memo” on Standards Reform. Pecht’s work led to Army’s establishment of a Physics-of-Failure Branch and their use of software generated by CALCE for military systems. Similarly, GM transitioned from military reliability standards and now requires the use of CALCE reliability software in their vehicles under GM specification GM-3172.
- 1992, Conducted physics-of-failure methodology for the reliability assessment of electronics in NASA’s Zeno Space Shuttle Experiment. Demonstrated the applicability of the physics-of-failure approach in the design and assessment of the Zeno Program, as a replacement for Mil-Hdbk-217 and progeny.
- 1991, Developed techniques to monitor quality and logistics parameters and to aid in decision support during the design of electronic assemblies, under DARPA’s Initiative in Concurrent Engineering (DICE). These techniques were incorporated into Texas Instruments’ (Raytheon) CARMA software and commercially marketed.
- 1990, Conducted experimental study of AWACs cooling to determine the temperature profiles of AWACs convectively cooled electronic equipment and developed models for reliability design and assessment.
- 1988–1990, Developed microelectronic packaging design guidelines for the U.S. Air Force. This was the first document of its kind to incorporate physics-of-failure in design (DfR). These guidelines were extended to incorporate commercial and industrial microelectronic packaging trade-offs.
- 1987–1989, Developed reliability models for very high speed integrated circuit (VHSIC) devices and semiconductor packages for the U. S. Air Force.
- 1986–1988, Developed methodologies and computational techniques for derating and preferred parts selection for the U.S. Integrated Electronics Warfare Systems (INEWS) program.
- 1984–1986, Developed the first Reliability and Maintainability Computer Aided Design (RAMCAD) software. Lead to the development of RAMCAD software by more than ten commercial companies.

PROFESSIONAL SOCIETIES

Fellow	Institute of Electrical and Electronics Engineers (IEEE) American Society of Mechanical Engineers (ASME) Society of Automotive Engineers (SAE) Int’l Microelectronics and Packaging Society (IMAPS)
Senior Member	Institute of Environmental Sciences and Technology (IEST)
Member	Association for the Advancement of Artificial Intelligence (AAAI)

Institute for Interconnecting and Packaging Electronic Circuits (IPC)
 American Society of Materials Int'l (ASM)
 ASM - Electronic Device Failure Analysis Society (EDFAS)
 Surface Mount Technology Association (SMTA)

PROFESSIONAL SERVICES

Board of Directors	<p>Scientific Advisory Board: Alstom- France (2015–2018) Early-Bird Alert Inc. (2008–2016) The Prognostics and Health Management Society (2009–2010) Energetic Technology Center, Maryland (2007) Airpax, a Subsidiary of Philips (1998)</p>
Editor-in-Chief	<p>Circuit World (2019–present) IEEE Access (2012–2018) Life Cycle Reliability and Safety Engineering, Springer Pub. (2012–present), formerly, SRESA Journal of Life Cycle Reliability and Safety Engineering International Journal of Performability Engineering (2011–2012) Microelectronics Reliability International (1996–2012) IEEE Transactions on Reliability (1988–1997) The Wisconsin Engineer Magazine (1979–1980)</p>
Associate Editor	<p>IEEE Transactions on Electronic Components, Packaging and Manufacturing Tech. (1995–2010) International Microelectronics Journal (1995–2002) SAE Journal of Reliability, Maintainability and Supportability (1993–1997) IEEE Transactions on Reliability (1987–1988)</p>
Editor-at-Large	<p>Marcel Dekker: Electrical Engineering and Electronics (1991–1993)</p>
Editorial Board	<p>IEEE Access (2019–present) Energies, MDPI AG, Switzerland (2015–present) Journal of Electronic Measurement and Instrument (2014–present) Editor from U.S. (2013–present). Chinese Journal of Aeronautics (2013–present) Journal of COMADEM, Honorary Regional (2013) Proceedings of the ICMR (2013) Journal of Systems Engineering and Electronics, China (2011–present) Journal of Reliability and Risk Analysis: Theory and Applications (2009) KSME International Journal, Korean Society of Mechanical Engineers (1997–2005) IEEE Spectrum (1993–1995) Journal of Electronics Manufacturing (1990–1999) Journal of Concurrent Engineering (1990–1992)</p>
Chairperson	<p>International Scientific Advisory Panel (ISAP) for the Offshore Robotics for Certification of Assets (ORCA) Hub. The Hub is a collaboration of experts from 5 United Kingdom universities and more than 30 industry partners with expertise in subsea, ground and aerial robotics, human-machine interaction, asset management and certification, and innovative and low-cost sensor networks. IEEE Reliability Prediction Assessment Guidebook #1413.1 (1999–2002) IEEE Standard Methodology for Reliability Prediction and Assessment for Electronic Systems and Equipment #1413 (1995–1998) IEEE Reliability Program Standard #1332 (1995–1998)</p>
Conference Chair	<p>Symposium on Solder Interconnect Reliability, National University of Singapore, Singapore, December 8–11, 2015</p>

IEEE PHM 2015, 2015 Prognostics and System Health Management Conference, Beijing, China, October 21–24, 2015
IEEE PHM 2014, 2014 Prognostics and System Health Management Conference, Zhangjiajie, Hunan, China, August 24–27, 2014
IEEE Prognostics and System Health Management Conference, May 23–25, 2012, Beijing, China

General Chair, Founder, and Organizer

Battery Management Systems for High Operational Availability and Safety Conference, Shenzhen, China, May 21, 2012
IEEE Prognostics and Systems Health Management Conf., Shenzhen, China, May 24–27, 2011
International Conference on Reliability, Maintainability and Safety (ICRMS 2011), Guiyang, China, June 2011
2nd International Conference on Reliability, Safety and Hazard-2010 (ICRESH 2010), New Mumbai, India, Dec. 14–16, 2010
IEEE Prognostics and Health Management Conference 2010 (PHM-2010 Macau), Macau, P.R. China, Jan. 12–14, 2010
Prognostics and Health Management, ASME 2009 DETC & CIE Conference, San Diego, CA, Aug. 30–Sept. 2, 2009
2009 8th International Conference on Reliability, Maintainability and Safety (ICRMS 2009), Chengdu, China, July 20–24, 2009
Int'l Conf. on Reliability, Maintainability and Safety 2007, Beijing, China (2007)
2004 Int'l Conf. on the Business of Electronic Product Reliability and Liability, Shanghai, China, April 27–30, 2004
IEEE Conf. on Business of Electronic Product Reliability and Liability, Hong Kong and Shenzhen, China, Jan 13–17, 2003

Member

Education committee; EDFAS- ASM (2015–present)
Association for the Advancement of Medical Instrumentation: Cochlear Implant Committee
IEEE Publications and Strategic Planning Board (PSPB) (2012–2018)
IEEE Standards Association (2000–2009)
U.S. Army Research, Development Engineering Command Reliability Focus Team (2008)
UL Standards Committee (2001–2008)
IEEE Representative to Int'l Reliability Standards Committee (1993–1995)
SAE Automotive Reliability Standards Committee (1990–1993)
Navy Electronics Manufacturing-Policy Committee (1992)

MEDIA PRESENTATIONS

1. Nikkei: "Aftermath of friction between the United States and China in the "brains of the world" United States, Huawei review," March 17, 2019.
2. CNN's Drew Griffin Investigates a Toyota Engineering Memo that Suggests an Electronic Problem in a Prototype Car, CNN Video, <http://www.cnn.com/video/#/video/bestoftv/2012/03/02/ac-griffin-toyota-investigation.cnn>; <http://www.cnn.com/2012/03/01/us/toyota-acceleration-documents/index.html?iref=allsearch>, March 1, 2012.
3. Zuga, L. and M. Pecht, "The Politicization of Counterfeit Electronics," *Battlespace Update*, Vol. 15, Issue 01, Jan. 5, 2012; "Misplaced Blame: The Politicization of Counterfeit Electronics," SLD (sldinfo.com) website, Dec. 14, 2011.
4. "Don't Blame the Chinese-Blame Raytheon," Letter to the Editor, Circuitnet website: (http://www.circuitnet.com/articles/article_85572.shtml), Nov. 23, 2011.
5. The Counterfeit Electronics Problem - Trying to Reach Harmony in a Storm, Int'l Conf. on Economics, Politics, and Security of China and the USA, Nov. 19, 2011 (televised live on Voice of America)
6. ACTUS, L'Offensive Made in China (*in French*), pp. 26-27, June 2011.
7. CNN, interviews on Toyota and sudden acceleration and congressional hearing, March 2, 2010.
8. NPR, Toyota Recalls Spur worries-Sudden Acceleration in Toyota Vehicles, Feb. 3, 2010.
9. History Channel Modern Marvels: Engineering Disasters, Tin Whiskers, March 22, 2006.
10. CNN with Lou Dobbs, China's Semiconductor Industry and exporting, Sept 16, 2004.
11. Newsnight Maryland, Maryland Public Television: Electronics Industry, June 8, 1998.

PATENTS

1. Embedded Sensors for In-Situ Cell Monitoring of Batteries, A. Fortier, Y. Xing, and M. Pecht, U.S. Patent # 2018/0321325 A1, Nov. 8, 2018 (USA).
2. Systems, Methods, and Devices for Health Monitoring of an Energy Storage Device, B. Sood, M. Osterman, M. Pecht, U.S. Patent # 10,014,561, July 3, 2018 (USA).
3. 3D RF Mems Biosensor for Multiplexed Label Free Detection, A. Vasani, M. Pecht, and A. Kluger, U.S. Patent # 9,151,723, Oct. 6, 2015 (USA).
4. Energy Harvesting Using RF MEMS, Ravi Doraiswami M. Pecht, A. Vasani, Y. Huang, and A. Kluger, U.S. Patent # 8,859,879, Oct. 14, 2014 (USA).
5. Wireless Biosensor Network for Point of Care Preparedness for Critical Patients, R. Doraiswami, M. Pecht, A. Vasani, Y. Huang, and A. Kluger, U.S. Patent #8,878,667, Oct. 14, 2014 (USA).
6. Method to Extract Parameters from in-situ Monitored Signals for Prognostics, Vichare, N., and M. Pecht, U.S. Patent # 8,521,443, Aug. 27, 2013 (USA).
7. Prognostics and Health Management Implementation for Self Cognizant Electronic Products, M. Pecht, and J. Gu, U.S. Patent #8,494,807, Jul. 23, 2013 (USA).
8. MEMS Barcode Device for Monitoring Medical Systems at Point of Care, R. Doraiswami, M. Pecht, A. Vasani, Y. Huan, and A. Kluger, U.S. Patent # 8,424,765, Apr. 23, 2013 (USA).
9. A Prognostics and Health Management Method for Aging Systems, M. Pecht and S. Cheng, U.S. Patent # 8,423,484, Apr. 16, 2013 (USA).
10. Electromechanical Device Having a Plurality of Bundles of Fibers for Interconnection of Two Planar Surfaces, U.S. Patent # 7,220,131, May 22, 2007 (USA).

HONORS AND AWARDS

1. Awarded: PHM Lifetime Achievement Award, PHM Society, Sept 2019.
2. Awarded: IEEE CPMT Technical Field Award (2016).
3. Awarded: 2015 Applied Energy Award – most highly cited research paper. Xing, Y., W. He, and M. Pecht, "State of Charge Estimation of Lithium-ion Batteries Using the Open-circuit Voltage at Various Ambient Temperatures," *Applied Energy*, Vol. 113, pp. 106–115, Jan. 2014.
4. Best Student Paper Award of Conference (2016): N. Jordan Jameson, Kai Wang, Carlos Morillo, Michael H. Azarian, and Michael Pecht, "Health Monitoring of Solenoid Valve Electromagnetic Coil Insulation under Thermal Deterioration," *Proceedings of MFPT 2016/ISA's 62nd IIS*, Dayton, OH, May 24-26, 2016.
5. Awarded: 2016 Chinese Academy of Sciences President's International Fellowship.

6. Best paper award: Fan, J., ChengQian, Fan, X., Zhang, G., and M. Pecht, "In-situ Monitoring and Anomaly Detection for LED Packages Using a Mahalanobis Distance Approach," *The First International Conference on Reliability System Engineering & Prognostics and System Health Management Conference-Beijing* (2015 ICRSE & PHM-Beijing), Beijing, China, October 23, 2015.
7. Awarded the distinction of "Honorary Professor" by the Harbin Institute of Technology (HIT) in Harbin, China, on July 16, 2015. The Honorary Professor award was granted to Prof Pecht for his technical expertise batteries and for his involvement with HIT in battery research. HIT was established in 1954 and is a member of the prestigious C9 League of Chinese universities. HIT was ranked 10th in the ranking of "Best Global Universities for Engineering" by *U.S. News & World Report* in 2015.
8. Awarded: 2015 Distinguished Scientist: Chinese Academy of Sciences President's International Fellowship.
9. IEEE Access was awarded the 2015 PROSE Award winner in the subject category of "Journal/Best New STM (Scientific, Technical, and Medical)." Prof. Pecht is the Editor-in-Chief of IEEE Access. The American Publishers Award for Professional and Scholarly Excellence (PROSE) annually recognize the very best in professional and scholarly publishing by bringing attention to distinguished books, journals, and electronic content. IEEE Access was also a finalist for the Award for Excellence in Physical Sciences and Mathematics.
10. "Academic Excellence Award" by the Electronics Components Industry Association (ECIA). The award is used to recognize outstanding academic projects 'that reference the application of advanced technologies for passive electronic components'. Peter, Anto, Michael H. Azarian, Michael Pecht, "Step Stress Testing of Electric Double Layer Capacitors," International Capacitor and Resistor Technology Symposium, Santa Clara, CA, April 2014.
11. 2014 Corporate Connector of the Year from the University of Maryland, College Park: The Corporate Connector Award celebrates those individuals or units on campus that do the most to promote and connect UM with the private sector to advance research, partnerships, and scholarship.
12. 4th most cited article in Transactions of the Institute of Measurement and Control over five years (2009 -2014): Pecht, M. and Gu, J., "Physics-of-failure-based Prognostics for Electronic Products," *Trans. of the Institute of Measurement and Control*, Vol. 31, No. 3/4, pp. 309–322, 2009, DOI: 10.1177/0142331208092031
13. 2013: Received gift of \$750k for research into automotive reliability from Hagans, Berman, Sobol, Shapiro LLP
14. 2013 IEEE Educational Activities Board/Standards Association (EAB/SA) Standards Education Award "for continued leadership in developing and promoting standards education in the field of reliability engineering."
15. Outstanding Paper Award (2013): for Williard, N., W. He, M. Osterman, and M. Pecht, "Reliability and Failure Analysis of Lithium Ion Batteries for Electronic Systems," International Conference on Electronic Packaging Technology and High Density Packaging (ICEPT-HDP), Aug. 2012.
16. University of Wisconsin-Madison College of Engineering Distinguished Achievement Award (2013). In recognition of the eminent Professional contributions as a "world-renowned professional engineer and educator whose innovations in reliability and prognostic methods have made a significant contribution to the field of electronics"
17. Most downloaded article in Microelectronics Reliability for the years 2012, 2013, 2014: Chang, M-H, D. Das, P.V. Varde, and M. Pecht, "Light Emitting Diodes Reliability Review," *Microelectronics Reliability*, Vol. 52, No. 5, pp. 762–782, May 2012.
18. First Place, IEEE PHM 2012 Prognostic Challenge, Academic Category (2012): for successfully extracting degradation features from vibration data and developing fault propagation models to accurately predict the remaining useful life of bearings. The CALCE team included Arvind Vasani, Edwin Sutrisno, Wei He, Moon-Hwan Chang, Jing Tian, Yan Ning, Hyunseok Oh, and Surya Kunche.
19. Best Student Paper Award of Conference (2012): for Chauhan, P., M. Osterman, and M. Pecht, "Canary Approach for Monitoring BGA Interconnect Reliability under Temperature Cycling," MFPT 2012: The Prognostics and Health Management Solutions Conference, Dayton, OH, April 24–26, 2012.
20. Overall Best Conference Paper from Academia (2011): for Haddad, G., P. Sandborn, and M. Pecht, "Method for Valuating Options Arising in PHM," *Proc. of 2011 IEEE PHM Conference*, Denver, CO, June 2011.
21. Inducted to 2011 Innovation Hall of Fame at the A. James Clark School of Engineering, University of Maryland (2011): for pioneering innovations in advanced reliability and prognostic methods for electronics.
22. Maurice Simpson Technical Editors Award for best paper of the 2010 year (2010): for Gu, J. and M. Pecht, "Prognostics and Health Assessment Implementation for Electronic Products," *J. of the IEST*, Vol. 53, Num 1, pp. 44-58, April 2010.
23. Indian Society of Reliability, Maintainability and Safety Lifetime Reliability Achievement Award (2010): On Dec. 16, 2010 in Mumbai, India, Dr. Pecht received the first and highest reliability award of its kind of India for his "significant contributions in the area of product reliability, prognostics & health management of electronic components."

24. CPMT Society Exceptional Technical Achievement Award (2010): to recognize for exceptional technical achievement in the fields encompassed by the CPMT Society. "Dr Pecht is recognized worldwide for his seminal contributions in the area of electronics reliability from which he has developed a new and significant field of prognostics for electronics. This includes models that enable in-situ assessment of the deviation or degradation of a product from expected normal operating conditions and the prediction of the future state of reliability of that product. Michael's contributions in this area span more than 20 years and his subject matter expertise is disseminated in a book, several book chapters, handbooks, numerous articles, invited talks and short courses presented worldwide."
25. Society of Automotive Engineering (SAE) Fellow (2010): for his research and promotion of the reliability of the electronic parts and systems used in automotive and aerospace applications.
26. National Defense Industrial Association award (2009) for CALCE for demonstrating outstanding achievement in the practical application of Systems Engineering principles, promotion of robust systems engineering principles throughout the organization, and effective systems engineering process development.
27. University of Maryland Outstanding Faculty Research Award (2009): to recognize research contributions and exceptionally influential research accomplishments by engineering faculty.
28. Outstanding Paper, I-Connect (Connecting the Global Electronics Supply Chain), (2009): for the paper, He, X., M. Azarian, and M. Pecht, "Comparative Assessment of Electrochemical Migration on PCBs with Lead-Free and Tin-Lead Solders," SMT Online Magazine.
29. The Alexander Schwarzkopf Prize for Technological Innovation (2008): awarded to National Science Foundation (NSF) Industry/University Cooperative Research Centers that have had a significant impact on the world. CALCE won the award for its research on physics-of-failure reliability analysis methods and advanced supply chain management concepts for electronic products and systems.
30. Best Paper Award (2008): for the 62nd Meeting of the Society for Machinery Failure Prevention Technology. Gu, J., Barker D., and M. Pecht, "Prognostics of Electronics under Vibration Using Acceleration Sensors," Proceeding for 62nd Meeting of the Society for Machinery Failure Prevention Technology (MFPT), Virginia Beach, VA, May 2008, pp. 253-263.
31. Maurice Simpson Technical Editors Award (2008) for best 2007 article in IEST. Sony Mathew, Diganta Das, Michael Osterman, Michael Pecht, Robin Ferebee, and Joseph Clayton, for their paper, "Virtual Remaining Life Assessment of Electronic Hardware Subjected to Shock and Random Vibration Life Cycle Loads," Journal of the IEST, Vol. 50, No. 1, pp. 86-97, April 2007.
32. Japan Society for the Promotion of Science Fellowship (2008): for research in prognostics in electronics.
33. IEEE Reliability Society's Lifetime Achievement Award (2007): recognizes Prof. Pecht's long-term contributions to the Reliability Society, reliability research, and reliability education, all benefiting the reliability community.
34. European Micro and Nano-Reliability Award (2007): for outstanding contributions to reliability research.
35. Distinguished International Service Award (2006) for significant contributions to the development of international institutional programs at the University of Maryland; and a distinguished international career.
36. Grand Fellowship of the Mirce Academy, England (2005): the highest award that the Academy can bestow upon an individual in recognition of their unique contribution to the understanding and/or predicting of the motion of functionability through system life, at the global level of significance.
37. IEEE Best Paper of the Year (2004) Award: for paper titled "Characterization of Hygroscopic Swelling Behavior of Mold Compounds and Plastic Packages."
38. The Royal Society, United Kingdom, Kan Tong Po Electrical Engineering Visiting Professorship Award at City University in Hong Kong (2002).
39. George E. Dieter Chair Professor of Mechanical Engineering, for significant contributions to the reputation of the Department, College and University with the establishment of CALCE Electronic Products and Systems Center (2001).
40. IEEE Standards Award for chairing and developing IEEE Standard Methodology for Reliability Prediction and Assessment for Electronic Systems and Equipment #1413 (2000).
41. IEEE Standards Award for chairing and developing IEEE Reliability Program Standard #1332 (2000).
42. 3M Research Award for "research work in the electronics reliability area that has made significant contributions to the scientific understanding of material properties and their complex behavior" (1999).
43. ASME Electrical and Electronic Packaging Division (EPPD) Award "for outstanding contributions to the field of application of engineering mechanics to electronic packaging" (1999).
44. IEEE Undergraduate Teaching Award, "for the development and realization of a cross disciplinary educational program in Computer Aided Life Cycle Engineering (CALCE)" (1999).

45. Outstanding paper of the year for the Microelectronics Int'l Journal, "Popcorn in PBGA Packages during IR Reflow Soldering," P. McCluskey, R. Munamarty, and M. Pecht, Vol. 42 Nr. 1, (1997).
46. ISHM/IEPS William D. Ashman Memorial Achievement Award (1997), "for his numerous contributions to academia and the electronics packaging industry."
47. IEEE Reliability Society's Annual Reliability Award (1996), "for his contributions to the IEEE Trans. on Reliability, his work with CALCE Electronic Packaging Research Center and his work on Reliability Standards."
48. Faculty Achievement Award (April 1996), "in recognition of outstanding contributions to industrial research enabled by the Technology Initiatives Program."
49. American Society for Quality Control: Reliability Division, Austin Bonis Award for the Advancement of Reliability Education (1996) for outstanding achievement in the advancement of reliability education.
50. Institute of Environmental Sciences Reliability Test and Evaluation Award (1996), "for vital contribution to the development and promotion of physics-of-failure modeling and analysis as a valuable reliability design and test process in the government, commercial and academic communities."
51. ASME Fellow (1995), "for promoting the art, science, and practice of mechanical engineering."
52. National Aeronautics Space Agency (NASA) certificate of "recognition of your significant contributions in the preparation and execution of the successful Second U.S. Microgravity Payload (USMP-2) Mission, launched on March 4, 1994."
53. IEEE Fellow (1992), "for effectiveness in leadership in the development and realization of an exemplary program and successful efforts to raise the level of engineering excellence and practice within and without the organization."
54. Int'l Electronic Packaging Society (IEPS) Educational Award "for excellence in research and education at the University of Maryland CALCE Electronics Packaging Research Center (1990)."
55. Best paper of the year (Maurice Simpson Technical Editors Award) for the Journal of the Institute of Environmental Sciences, "Reliability Prediction of Electronic Packages," May/June 1990.
56. Best paper award, "How Failure Prediction Methodology Affects Electronic Equipment Design," with C. Leonard, Power Conversion Conf., Long Beach, CA, Oct. 16-19, 1989.
57. Westinghouse Professor (1987-1988).
58. Visiting Scholar Award, Excellence in Reliability and Maintainability, Air Force Institute of Technology, Wright Patterson Air Force Base, Dayton, OH, June 15-July 10, 1987.
59. Outstanding Systems Engineering Faculty, (1986-1987), Systems Research Center, Univ. of Maryland.
60. Engineering Research Center's University of Maryland, Technology Advancement Program (TAP) Award (1986).

PUBLICATIONS

Books Authored/Edited

1. Hazelwood, D. A., Sanchez, M. C., Anand, D. K., Pecht, M., *The True Cost of Waste: Current Issues in Electronic Waste*, CALCE EPSC Press, College Park, MD, 2018.
2. Kapur, K., Pecht, M., *Reliability Engineering (in Chinese)*, National Defense Industry Press, 2018.
3. Pecht, M., and M. Kang, *Prognostics and Health Management of Electronics: Fundamentals, Machine Learning, and the Internet of Things*, Wiley, New York, NY, 2018.
4. Varde, P.V., and M. Pecht, *Risk-Based Engineering*, Springer Singapore, 2018.
5. Anand, D., D. Hazelwood, M. Pecht, and M. Kapilashrami, *Engineering for Social Change: Engineering Is Not Just Engineering*, CALCE EPSC Press, University of Maryland, College Park, MD, 2016.
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Monographs, Reports, and Extension Publications

1. Morillo, C., S. Menon, A. Pearl, P. Chauhan, M. Osterman, M. Pecht, and J. Hay, "In Situ Young's Modulus and Strain-Rate Sensitivity of Lead-Free SAC 105 Solder," Agilent Technologies, Application Note, Mar. 2013.
2. Pecht, M., R. Kaczmarek, X. Song, D. Hazelwood, R. Kavetsky, and D. Anand, "Rare Earth Materials: Insights and Concerns," Circuitnet, white paper, Oct 2012.
3. Kostoff RN, Briggs, MB Rushenberg, RL, Bowles, CA, Pecht, M., "The Structure and Infrastructure of Chinese Science and Technology," DTIC Technical Report ADA443315, Defense Technical Information Center, Ft. Belvoir, VA, 2006.
4. Editorials in IEEE Transactions on Components and Packaging Technologies: "Open Forum: Editorial," 4 per year, [1996 - 2010].
5. "Electronics Manufacturing in Hong Kong and China," Boulton W., Pecht M., Hodges D., E. Vardaman, Int'l Technology Research Institute, Baltimore, MD, Sept. 2000.
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7. Benchmarking Nortel's Processes, PACE's Qualification Methodology Group, Sept. 1998.
8. Boulton, W.R., Pecht, M., Tucker, W. and S. Wennberg, Singaporean and Malaysian Electronics Industries, Chapter 4, WTEC Panel Report on Electronic Manufacturing in the Pacific Rim, Loyola College, MD, pp. 49-64, May 1997.
9. Xerox Project: Distributed Filament Contacts, Xie, J., Pecht, M., Swift, J. and S. Wallace, Nov. 1996-May 1997.
10. The Aries Project for Rule-Based-Design Knowledge Acquisition, Institute for Defense Analyses, May 1995.
11. Special Technology Area Review on Electronics Packaging, Report of Dept. of Defense, Advisory Group on Electron Devices, contributor, July 1993.
12. "First Principles of Concurrent Engineering: A Competitive Strategy for Product Development," National Security Industrial Association, 1 of 12 contributors, May 12, 1992.
13. "Assessment and Qualification of Advanced Packaging and Interconnects," NASA, April 1992.
14. "Design and Assessment Issues for Modern Cost Effective Military Electronics," Pecht, M., Shan, X., Lall, P. and R. Agarwal, David Taylor Laboratories, Nov 1991.
15. "Reliability Analysis/Assessment of Advanced Technologies," Rome Air Development Center, Air Force Systems Command, RADCTR9072, May 1990.
16. Computer Aided Life Cycle Engineering at the University of Maryland, Pecht, M. and D. Barker, in The CALS Report, edited by William Beazley, Pasha Publications, Rosslyn, VA, 1989; update of R&M in the Context of Interdisciplinary Research, Pecht, M., Dasgupta, A. and D. Barker, Proc. Concurrent Engineering of Mechanical Systems, Vol. 1, pp. 353368, Oct. 1989; update of CALCE Research Opportunities at the University of Maryland, Pecht, M., Barker, D. and D. Weiss, Proc. 1989 IEEE Int. Electronic Manufacturing Sym., pp. 182185, San Francisco, Sept. 2527, 1989*; update of Computer Aided Life Cycle Engineering at the University of Maryland, Pecht, M. and D. Barker, Proc. 5th Annual RAM/CAD Technical Interchange Meeting, San Diego, CA, pp.198212, April 1112 1989*; update of CALCE Center at the University of Maryland Helps Electronics Design Industries, Pecht, M. and D. Barker, CALS Report, Vol. 2 (8), pp. 1617, Aug. 1989.
17. "Decision Support Requirements in a Unified Life Cycle Engineering (ULCE) Environment," Vol II: Conceptual Approaches to Optimization, Vol III: Applications of Decision Support to Design, IDA Paper P2064, May 1988.
18. Free Convection Analysis for PCB's, Pezza, A., Pecht, M. and M. Palmer, Westinghouse Defense Electronics Center, DSC13673, Aug. 1986.
19. "The Effects of Component Placement on the Thermal Reliability of Conductively Cooled Printed Circuit Boards," Pecht, M. and M. Palmer, Westinghouse Defense Electronics Center, DSC13670, Apr. 1986.
20. CAE Program for Printed Wiring Board Thermal and Reliability Analysis, Pecht, M. and M. Palmer, Westinghouse Defense Electronics Center, DSC13650, Feb. 1986.
21. Sawyer, T. and M. Pecht, A Material Selection Program, BYTE: The Small Systems Journal, Vol. 11 (7), . 235-248, 1986; A Desktop Aid For Materials Selection, M. Pecht, Machine Design, pp. 164, Apr. 1987; update of MSP: A Material Selection Program, Pecht, M., Sawyer, T., Dieter, G. and Y. Pan, Proc. ASEE Computer Aided Engineering, Vol. 2, pp. 635-638, June 1985.
22. "A Thermal Analysis Interface to RacalRedac," Pecht, M., Palmer, M. and J. Horan, Westinghouse Defense Electronics Center, DSC-13467, Feb. 1985.
23. "Mechanical Response of Thermoplastics to Environmental Aging," II, Ramis, A., Sutton, R., Tenny, M. and M. Pecht, "Mechanical Response of Thermoplastics to Environmental Aging," I, Berringer, B., Cranston, J., LaValle, T., McGrath, P. and M. Pecht, "Experimental Creep Studies of the Effects of Aging on Thermoplastic AF1006," Gordon, L., Mary, B., Tyber, M., Wentzel, A. and M. Pecht, "A Study of the Effects of Environmental Conditioning of

Isoplast 101 and Thermocomp GF1006,” Bitting, R., Colle, P., Everhart, D., Naragfhi, M., Neshati, A., Simpson, K. and M. Pecht, NSWC Report, (Sections of NSWC TR 8516) Naval Surface Weapons Center, White Oak, MD, Dec. 1983.

Invited Talks, Lectures, and Keynote (invited*) Presentations

1. *”The Era of Embedded Intelligence,” **Keynote Speaker**, Computing, Communications and IoT Applications Conference (ComComAp2019), Shenzhen University, Shenzhen, China, Oct. 27, 2019.
2. *”What the Best Companies are Doing in Reliability – AI-Based Reliability,” **Keynote Speaker**, Arçelik 3rd Reliability Day, Istanbul, Turkey, Oct. 21, 2019.
3. “Investigation of Arcing in Cylindrical Li-ion Batteries,” with Younguan Sun, 3rd *International Battery Safety Workshop*, Tsinghua University, Beijing, China, Oct. 7–8, 2019.
4. * “The Use of UL 1642 in Impact Testing of High Capacity Li-ion Cells,” **Keynote Speaker**, 3rd *International Battery Safety Workshop*, Tsinghua University, Beijing, China, Oct. 7–8, 2019.
5. * “The Electrifying Pace of Automotive PHM,” panel at: *11th Annual Conference of the Prognostics and Health Management Society (PHM2019)*, Scottsdale, AZ, Sept 24–25, 2019.
6. * “Fielded Systems: Lessons Learned,” panel at: *11th Annual Conference of the Prognostics and Health Management Society (PHM2019)*, Scottsdale, AZ, Sept 24–25, 2019.
7. * “Addressing Hardware Security in Information Systems,” **Keynote Speaker**, *Second International Conference on Machine Learning for Cyber Security (MLACS2019)*, Xi’an, China, Sept 19–21, 2019.
8. “A Fusion Prognostics Model for Predictive Health Management of Railway Track Circuits,” *17th International Probabilistic Workshop*, Edinburgh, UK, Sept 11–13, 2019.
9. * “AI in China: Advances and Challenges,” Office of the Under Secretary for Science, August 21, 2019.
10. * “The Use of Prognostics and Systems Health Management for Reliable and Safe Operation of the Power Grid,” 4th Purple Mountain Forum on Smart Grid Protection and Operational Control (PMF-SGPC 2019), Nanjing, China, August 17-18, 2019.
11. * “IEEE 1624 Reliability Standard for Organizational Reliability Capability—What Is It and How Can It Help Your Company,” Trends and Challenges in Reliability seminar, Eindhoven, The Netherlands, May 10, 2019.
12. * “Electronics Reliability: What the Best Companies are Doing: The U.S. National Academy of Science Study,” University of Houston, Feb 14, 2019.
13. * “The Era of Embedded Intelligence,” **Keynote Speaker**, 1st *International Conference on Computational Intelligence in Pattern Recognition (CIPR 2019)*, Indian Institute of Engineering Science and Technology, Howrah, West Bengal, India, Jan 19-20, 2019.
14. * “The Era of Embedded Intelligence,” **Keynote Speaker**, *The 4th International Conference on Reliability, Safety and Hazard*, Indian Institute of Technology, Chennai, India, Jan 10-13, 2019.
15. * **Keynote Speaker**. *2018 8th IEEE International Conference on Power and Energy Systems*. Colombo, Sri Lanka, Dec 21-22, 2018.
16. * “Understanding and Predicting the Risk in Electronics Systems,” **Keynote Speaker**, *The 20th International Conference on Electronic Materials and Packaging*, Hong Kong University of Science and Technology, Hong Kong, Dec 17-20, 2018.
17. * “FDA E-Cigarette Battery Considerations and Challenges,” *2019 Global New Tobacco Product Innovation & Development Summit*, Shanghai New International Expo Center, Shanghai, China, Dec 8, 2018.
18. * “Heat not Burn Battery Considerations and Challenges,” *2019 Global New Tobacco Product Innovation & Development Summit*, Shanghai New International Expo Center, Shanghai, China, Dec 7, 2018.
19. * “Why Suppliers Should No Longer Be Trusted for Reliable Products,” **Keynote Speaker**, *2018 3rd International Conference on System Reliability and Safety*, Barcelona, Spain, Nov 24-26, 2018.
20. * “From the Explosion of E-Cigarettes to the Safety of Batteries,” **Keynote Speaker**, *International Conference on Energy, Ecology and Environment*, Swinburne University of Technology, Hawthorn, Victoria 3122, Australia, Nov 21-25, 2018.
21. * “The U.S. Food and Drug Administration’s Database of Medical Device Adverse Events: A Case Study of ESD Failures,” **Keynote Speaker**, *2018 Taiwan ESD and Reliability Conference*, National Chiao Tung University, Hsinchu, Taiwan, Nov 7-9, 2018.
22. * “Electronics Reliability: What the Best Companies are Doing,” *Development of Reliable Products Based on Physics of Failure*, Hovedstaden, Denmark, Oct 31, 2018.
23. * “Systems Health Monitoring and Management within the Internet of Things,” **Keynote Speaker**, *Chinacom 2018 - 13th EAI International Conference on Communications and Networking in China*, Chengdu, China, Oct 23-25, 2018
24. * “Using AI based Data Analytics to Assess the Health and Predict the Reliability of Electronic Systems,” *Hong Kong Electronic Forum- AI Enhanced Reliability and Functional Safety for Electronic System*, Hong Kong, Oct 15, 2018.
25. * “Today’s Three Big Challenges in Producing Reliable Products,” *Smarter Electronics Systems Summit* and presentation for Scania, Stockholm, Sweden, Sept 11-12, 2018.

26. * “The Era of Embedded Intelligence,” *14th Institute of Electronic Science and Technology of China*, Nanjing, China, Aug 24, 2018.
27. “Using IoT Output for Prognostics and Systems Health Management,” *2018 6th International Conference on Network Infrastructure and Digital Content (IC-NIDC 2018)*. Guizhou Huaxi Hotel, Huaxi District, Guiyang, China, Aug 22-24, 2018.
28. “The Era of Embedded Intelligence,” Zhejiang University, Hangzhou, China, Aug 20, 2018.
29. * “Culture and Engineering for Social Change,” Wuxi University, Wuxi Shi, Jiangsu Sheng, China, Aug 18, 2018.
30. “Advances in Battery Performance and Reliability Assessment,” Dell Computers, Austin, TX, July 31, 2018.
31. * “Breaking the Trust: Why Companies are Failing their Customers,” *The 18th IEEE Conference on Software Quality, Reliability, and Security*. Lisbon, Portugal, July 16-20, 2018.
32. * “Culture and Social Change,” Beijing Jiaotong University, Beijing, China, June 11, 2018.
33. * “Battery Fires and Explosion Research,” Beijing Institute of Technology, Beijing, China, June 10, 2018.
34. * “Embedded Sensor and Data Analytics,” School of Information and Communication Engineering, Beijing University of Posts and Telecommunications, Beijing China, June 8, 2018.
35. * “Embedded Sensor and Data Analytics,” Wuhan University, Wuhan, China, June 7, 2018.
36. * “Embedded Sensor and Data Analytics,” Chinese Academy of Science -SIA, Shenyang, China, June 7, 2018.
37. * “Embedded Sensor and Data Analytics, Harbin, China, June 6, 2018.
38. * “Prognostics and Systems Health Management Advances and Trends,” ISID- Microsoft PHM Conference, Tokyo, Japan, May 22, 2018.
39. * “IoT and Prognostics for Reliability,” National Cheng Kung University, Taiwan, May 14, 2018.
40. * “Advances in Product Qualification and Supply Chain Responsibilities,” **Keynote Speaker**, GOPE-2018 2nd International Conference on Gas, Oil and Petroleum Engineering, Houston, USA, Feb 26-28, 2018.
41. * “System Health Monitoring and Prognostics in the Internet of Things,” Indian Institute of Engineering Science and Technology, Kolkata, India, Jan 9, 2018.
42. “The U.S. Food and Drug Administration’s Database of Medical Device Adverse Events,” **Keynote Speaker**, The 19th International Conference on E-health Networking, Application & Services, Dalian, China, October 12-15, 2017.
43. “State of the Art Advances in Supply Chain Management, Reliability Testing and Reliability Prediction,” Quality Assurance of Electronic Hardware Seminar, Gothenburg, Sweden, Sept 8, 2017.
44. “Advances in Reliability Prediction, Testing and Supply Chain Management”, Speaker, *SPMs 50 years anniversary seminar on Reliability Management*, Denmark, Sept 5-6, 2017.
45. “E-bike Battery Lifetime Factors & Warranty Concerns,” *26th International Bicycle Trade Exhibition*, Friedrichshafen, Germany, Aug 30–Sep 2, 2017.
46. The “Prognostics-Based Qualification for Electronics Components and Systems,” **Keynote Speaker**, *International Conference on Sensing, Diagnostics, Prognostics, and Control*, Shanghai, China, August 16-18, 2017.
47. * “Systems Health Monitoring and Management within the Internet of Things,” **Keynote Speaker**, Harriot-Watt University Workshop on Embedded Intelligence”, Edinburgh, Scotland, Aug 9, 2017.
48. “Asia Pacific Conference of the Prognostics and Health Management Society.” Jeju, Korea, July 12-15, 2017.
49. * “Prognostics and System Health Management Conference”, Harbin, China, July 09-12, 2017.
50. * “International Conference on Reliability Systems Engineering”, Beijing, China, July 10-12, 2017.
51. “A New Application for Failure Prognostics – Reduction of Automotive Electronics Reliability Test Duration”, PHM
52. “Prognostics-Based Qualification for Power Electronics”, **Keynote Speaker**, *ECPE Workshop*, Condition and Health Monitoring in Power Electronics, Alborg, Denmark, July 4-5, 2017.
53. * “Systems Health Monitoring and Management within the Internet of Things,” 9th EAI International Wireless Internet Conference, Haikou, China, Dec. 19, 2016.
54. “Systems Health Monitoring and Management within the Internet of Things,” Guangdong University of Petrochemical Technology, Maoming, China, Dec. 17, 2016.
55. * Understanding and Predicting the Risks in Electronics, IEEE Italy, Milan, Nov 25, 2016.
56. * A Fusion Prognostics Approach to Qualification of Microelectronics” 2016 International Conference on Reliability and Science”, Paris, France, Nov 15-18, 2016.
57. * Understanding and Predicting the Risks in Electronics, Naval Research Center, Washington DC, Nov 10, 2016.
58. * “Supply Chain Management and Electronic Parts Selection”, KIMM Reliability Conference, Daejeon, Korea, Sept. 28, 2016.
59. “Batteries and Battery Management Systems for e-Bikes”, EuroBike, Friedrichshafen, Germany, Sept. 1, 2016.
60. * “Systems Health Monitoring and Management within the Internet of Things”, **Keynote Speaker**, Comadem2016, Xian, China, Aug 19–23, 2016.

61. * “Systems Health Monitoring and Management within the Internet of Things”, Cisco Internet of Everything Innovation Centre, Curtin University, Perth, Australia, June 21, 2016.
62. * “Prognostics and System’s Health Management for Electronics Systems”, Reliability Engineering Academy, Stuttgart, Germany, June 9, 2016.
63. * “Reliability Prediction Approaches”, Huawei, Shenzhen, China, May 27, 2016
64. “Systems Health Management and Prognostics within the Internet of Things,” Chongqing Technology and Business University, Chongqing, China, May 24, 2016.
65. * “Business Opportunities for Systems Health Management and Prognostics within the Internet of Things,” **Keynote Speaker**, UNIST Symposium on Prognostics and System’s Health Management, Ulsan, Korea, May 19, 2016.
66. “Advances in Qualification and Testing”, Chinese Academy of Science – Shenyang Institute of Automation, Shenyang, China, May 11, 2016
67. “Advances in Microelectronics Qualification”, Chinese Academy of Science – Institute of Microelectronics, Beijing China, May 9, 2016
68. “Systems Health Management and Prognostics within the Internet of Things,” Lindburg Lectures Series, University of Wisconsin – Madison, April 28, 2016.
69. “Reducing Risk - Systems Health Management and Prognostics within the Internet of Things,” College of Information Engineering, Capital Normal University, Beijing, China, April 20, 2016.
70. “Reducing Risk - Systems Health Management and Prognostics within the Internet of Things,” Ulsan Institute of Technology, Ulsan, Korea, April 17, 2016.
71. * “How Cultural Differences Affect Communications, Friendships, and Business Relations,” Yokohama National University, April 15, 2016.
72. “Systems Health Monitoring and Management within the Internet of Things,” HKUST Shenzhen Research Institute, Shenzhen, China, March 16, 2016.
73. “Reducing Risk - Systems Health Management and Prognostics within the Internet of Things,” **Keynote Speaker**, Institute of Advanced Sciences (IAS), Yokohama National University, Yokohama, Japan, March 3, 2016.
74. * “System Health Monitoring and Prognostics in the Internet of Things,” Lahore University of Management Sciences, Lahore, Pakistan, Jan. 19, 2016.
75. * “Advances in Predicting Electronics Reliability,” **Keynote Speaker**, 7th International Conference on Quality, Reliability, Infocom Technology and Business Operations, Delhi, India, Dec. 28–30, 2015.
76. * “A Perspective of the IPC Report on Lead-free Electronics,” Symposium on Solder Interconnect Reliability, Singapore, Dec. 8–11, 2015.
77. * “Solar Energy: Can We Meet the Reliability Requirements for Cost Effective Implementation,” **Keynote Speaker**, Lisbon, Portugal, Nov. 23–25, 2015.
78. “Understanding and Predicting Electronics System Reliability,” CORPE - Aalborg University, Denmark, Nov. 18, 2015.
79. Jian Guo, Zhaojun Li, and Michael Pecht, “A Bayesian Approach for Li-Ion Battery Capacity Fade Modeling and Cycle to Failure Prognostics,” NASA Aerospace Battery Workshop, Huntsville, AL, Nov. 17–19, 2015.
80. * “Prognostics in the Internet of Things,” IEEE Workshop on Automation, **Keynote Speaker**, Shenzhen, China, Nov. 2, 2015.
81. * “How Cultural Differences Affect Communications, Friendships, and Business Relations,” Guandong University, Maoming, China, Oct. 28, 2015; also Nanjing University, Oct. 26, 2015; also University of Science and Technology Beijing, Beijing, Oct. 23, 2015.
82. * “Understanding and Predicting Electronics System Reliability,” **Keynote Speaker**, IEEE PHM 2015, 2015 Prognostics and System Health Management Conference, Beijing, China, Oct. 22, 2015.
83. * “Advances in Reliability,” Undersecretary of Defense for Turkey, Ankara, Turkey, Sept. 16, 2015.
84. “Concerns with China as the World’s Electronics Supplier,” Software and Supply Chain Assurance Forum, McLean, VA, Sept. 1, 2015.
85. “Current Trends and Concern in System’s Reliability,” Mitre – Office of the Secretary of Defense, McClean, VA, Sept. 1, 2015.
86. “Prognostics in the Internet of Things,” 2015 Smart World Congress, **Keynote Speaker**, Beijing, China, Aug. 10–14, 2015.
87. Presentation on Lithium Ion Battery Separators to U.S. Patent Office, for the USPTO’s Patent Examiner Technical Training Program, July 28, 2015.
88. “PHM in the Internet of Things,” Harbin Institute of Technology lecture series, Harbin, China, July 16, 2015.
89. “System’s Engineering and Prognostics,” University of Western Australia, Perth, Au, July 7, 2015.
90. * “Prognostics and Systems Health Management within the Internet of Things,” **Keynote Speaker**, IEEE International Conference on CYBER Technology (IEEE-CYBER2015), Shenyang, China, June 8–12, 2015.

91. *"Understanding and Predicting Electronics System Reliability," **Keynote Speaker**, ICRESH-ARMS, Lulea, Sweden, June 4–6, 2015.
92. "Advanced Qualification and Accelerated Test Methods," State Key Laboratory of Solid State Lighting (Changzhou Base), Changzhou, China, May 13, 2015.
93. "Reliability and Systems Health Management," Smart Materials & Electronic Packaging Center, South China University of Technology, Guangzhou, China, May 12, 2015.
94. "Sensor Development, Prognostics and Data Analytics, and the Internet of Things," Shenyang Institute of Automation (SIA), Shenyang, China, March 10–13, 2015.
95. "Prognostics and Systems Health Management within the Internet of Things," **Keynote Speaker**, 2nd International Symposium on Physics & Technology of Sensors Conference (ISPTS-2), Pune, India, March 8–10, 2015.
96. *Battery Reliability and Safety," **Keynote Speaker**, 2014 the 4th International Conference on Power and Energy Systems (ICPES 2014), International Conference on Mechanical Manufacturing and Control (ICMMC 2014), Singapore, Nov. 22–23, 2014.
97. *Advances in the Reliability of LED Luminaires, **Keynote Speaker**, SIMTech AStar Conference on LEDs, Singapore, Nov. 19–20, 2014.
98. *Radiation Effect on Electronics, **Keynote Speaker**, 2014 International Conference on Particle Radiation Research and Applications, Taipei, Taiwan, Nov. 1–2, 2014.
99. *Advances in Battery Safety and Reliability, **Keynote Speaker**, International Forum on Reliability Engineering Applied to Power Battery, Taipei, Taiwan, Oct. 31, 2014.
100. *Prognostics and Systems Health Management within the Internet of Things, **Keynote Speaker**, Computing, Communications & Applications Conference - (ComComAp 2014), Beijing, China, Oct 20–24, 2014.
101. *Lessons Learned from the 787 Dreamliner on Lithium-ion Battery Reliability, **Keynote Speaker**, 27th International Congress of Condition Monitoring and Diagnostic Engineering Management (COMADEM 2014), Brisbane, Australia, Sept. 16 – 20, 2014.
102. "Battery Management Systems for e-Bike Safety", EuroBike, Friedrichshafen, Germany, Sept. 1, 2014.
103. Why the Best Companies are Monitoring the Health of Their Products and Systems, for Shenyang Institute of Aeronautics, Shenyang, Aug. 13, 2014.
104. *Why the Best Companies are Monitoring the Health of Their Products and Systems, **Keynote Speaker**, International Conference on Reliability, Maintainability and Safety (ICRMS), GuangZhou, China, Aug. 6-8, 2014.
105. *A Lead-Free Transition Plan for Safety and Reliability Critical Products, **Keynote Speaker**, International Conference on Challenges in IT, Engineering and Technology (ICCIET) Phuket, Thailand, July 17-18, 2014.
106. *A New Perspective on Electronic Product Reliability, Prognostics and Health Management, Emerson 2014 Technology Innovation and Growth Conference, June 23-25, 2014.
107. *Battery Prognostics and Safety Management, Nanjing University of Aeronautics and Aviation, Nanjing, China, June 12, 2014.
108. *Why the Best Companies are Monitoring the Health of their Products and Systems, Nanjing University of Aeronautics and Aviation, Nanjing, China, June 11, 2014.
109. *Why the Best Companies are Monitoring the Health of their Products and Systems, University of Science and Technology Beijing, Beijing China, June 10, 2014.
110. "Advanced Qualification of Automotive Electronics," International Seminar on Reliability Trends in ICT Combined Automotive Components, Korea Institute of Machinery & Materials (KIMM), Daejeon, Korea, May 14, 2014.
111. "Lithium Ion Battery Technology," China International Electric Vehicle and Parts Exhibition, Shanghai, China, April 13-16, 2014.
112. *Product Qualification and Supply Chain Responsibilities, 15th Electronics Packaging Technology Conf. (EPTC), Dec. 11, 2013.
113. Improved Battery Testability and Safety by Better BMS, China e-Bike Conference, Shanghai, China, April 13, 2014.
114. *Product Qualification and Supply Chain Responsibilities, 15th Electronics Packaging Technology Conf. (EPTC), Dec. 11, 2013.
115. *Counterfeit Electronics: Sources and Solutions, Conf. on Enterprise and Supply Chain Management (ESCM 2013), Sanya, China, Dec. 4, 2013.
116. *Prognostics and System Health Monitoring for Battery Systems Reliability and Safety, **Keynote Speaker**, 8th World Congress on Engineering Asset Management (WCEAM) & 3rd Int'l Conf. on Utility Management & Safety (ICUMAS), Hong Kong, Oct. 30, 2013.
117. *A New Approach to Qualification, **Keynote Speaker**, IPC Southeast Asia Conf., Bangkok, Nov. 19, 2013.
118. *Using PHM to Keep the Dreamliner in the Clouds, **Keynote Speaker**, 2013 PHM Conference, Milan, Italy, Sept. 9, 2013.

119. *Using System Health Monitoring to Keep the Dream-Liner in the Clouds, **Keynote Speaker**, 8th International Conference on Communications and Networking, Guilin, China, Aug. 15, 2013.
120. *Prognostics and System Health Monitoring for Avionics Battery Systems Reliability and Safety, **Keynote Speaker**, 2013 Xi'an International Aviation Maintenance and Management Conference, Xi'an, China.
121. Recommendations on Life Estimation for Cochlear Implants, 2013 IEEE International Symposium on Product Compliance Engineering, ISPCE 2013.
122. Health Monitoring of Lithium-ion Batteries, 2013 IEEE International Symposium on Product Compliance Engineering, ISPCE 2013.
123. *How to Buy Counterfeit Electronics, **Keynote Speaker**, Counterfeit Electronic Parts and Electronic Supply Chain Symposium East, College Park, MD, June 25, 2013.
124. *Battery Management Systems- The Key Challenge to the Electric Vehicle, **Keynote Speaker**, Power and Energy Engineering Conference, Hainan Island, China, Jan. 1, 2013.
125. *Prognostics and Systems Health Management for Sustainability, **Keynote Speaker**, E-Maintenance Conference, Lulea, Sweden, Dec. 13, 2012.
126. *Prognostics and Health Management, **Keynote Speaker**, Helsinki, Finland, Dec. 12, 2012.
127. *Prognostics and Health Management, Universidad Simon Bolivar, Caracas, Venezuela, Nov. 26, 2012.
128. *Implementation of Prognostics and Systems Health Management by Industry, Japanese Society of Mechanical Engineering, Tokyo, Japan, Oct. 19, 2012.
129. *Aerospace Challenges and Research Opportunities, The Hong Kong Polytechnic University, Aug. 30, 2012.
130. *Prognostics and Health Management, China Electronic Produce Reliability and Environmental Testing Institute (CEPREI), Aug. 23, 2012.
131. * Advanced Qualification Methods, **Keynote Speaker**, 13th International Conference on Electronic Packaging Technology & High Density Packaging (ICEPT-HDP 2012), Guilin, China, August 13, 2012.
132. *Reliability Engineering in the Next Generation, **Keynote Speaker**, Conference on Reliability Engineering, Reliability Center in Rafael, July 2, 2012.
133. *Advances in PHM for Tomorrow's Industries, **Keynote Speaker**, IEEE Prognostics and Health Management 2012 Conference, Beijing, China, May 23, 2012.
134. *Battery Management Systems, IEEE Battery Management System Conference, Shenzhen, China, May 21, 2012.
135. *LED Color Failure Prediction using Spectral Power Distribution, HKUST LED-FPD Technology R&D Center at Foshan, Guangdong, China, May 18, 2012.
136. *Battery Health and Safety Management, **Keynote Speaker**, MFPT 2012: The Prognostics and Health Management Solutions Conference, Dayton, OH, April 24, 2012.
137. *Battery Management Systems- The Key Challenge to the Electric Vehicle, International Forum on Life Cycle Analysis of Electronic Devices, New Taipei City, Taiwan, April 19, 2012.
138. *Battery Management System- Advances in Prognostics, Taiwan NSF Forum, Taipei, TW, April 18, 2012.
139. *Prognostics and System Health Management, National University of Taiwan, April 17, 2012; NCUT April 16, 2012.
140. *Battery Management Systems- The Key Challenge to the Electric Vehicle, **Keynote Speaker**, 2nd International Conference on Electric Information and Control Engineering (ICEICE), Lushan, China, April 7, 2012.
141. *The Counterfeit Electronics Problem - Trying to Reach Harmony in a Storm, Int'l Conf. on Economics, Politics, and Security of China and the USA, Uni. Of MD, College Park, MD, Nov. 19, 2011 (televised live on Voice of America)
142. *APEC Workshop on Energy and Green Transport Benefits of Electric Vehicles, Hong Kong Science Park, Hong Kong, Oct. 25, 2011.
143. *The Role of China in the Counterfeiting of Electronic Products, DC Counterfeit Microelectronics Working Group, Washington, DC, Oct. 27, 2011.
144. *Apple's Best Practices, Lenovo, Beijing, China, Sept 21, 2011.
145. *Apple's Best Practices, Lenovo, Shanghai, China, Sept 19, 2011.
146. *A New Approach to Qualification, Keynote Speaker, 2011 IEEE International Conference on Quality and Reliability, Bangkok, Thailand, Sep. 16, 2011.
147. *Apple's Best Practices, Huawei, China, Sept. 13, 2011.
148. *Prognostic Methods for Military Systems, Naval Surface Warfare, Indian Head, MD, August 18, 2011.
149. *New Trends in Product Development Process, PSD Seminar, LG Research Institute, Pyungteak, Korea, July 25, 2011.
150. *Apple's Best Practices, Lenovo, Xiamen, China, July 23, 2011
151. Reliability Concepts, Life Cycle Profile, 1st Reliability and PHM Workshop, Korea, July 14, 2011.
152. *Reliability Testing of Electronics for Military Applications," Korean Defense Logistics Conf., Daegon, Korea, July 7, 2011.

153. *Re-Innovating the Qualification Process for the Electronics Industry, **Keynote Speaker**, 9th Int'l Conf. on Reliability, Maintainability and Safety, Guiyang, China, June 13, 2011.
154. *Advances in Prognostics, IEEE PHM Conference, Shenzhen- China, May 24, 2011.
155. *Counterfeit Electronics, Department of Energy Panel, Washington, DC, May 12, 2011.
156. *Implications of China's Growing Electronics Industry, Military Microelectronics Conf., Washington, DC, May 9, 2011.
157. *Counterfeit Electronics, UM School of Law Symp., Baltimore, MD, March 25, 2011.
158. R&D in China, Workshop on Energetics - Past and Present, Center for Energetic Concepts Development, Hong Kong Science and Technology Parks, Hong Kong, China, Dec. 8, 2010.
159. Prognostics and Health Management based Qualification, 4th Asia-Pacific Int'l Symp. on Advanced Reliability and Maintenance Modeling (APARM 2010), Wellington, New Zealand, Dec. 2, 2010.
160. ***Keynote speaker**, Nano- S&T 2011, Dalian, China, Oct. 23-26, 2011.
161. *The Impact of Free Air Cooling on Telecom Equipment, Lenovo, Beijing, China, Jan. 4, 2011.
162. *The Impact of Free Air Cooling on Telecom Equipment, Huawei and ZTE, Shenzhen, China, Dec. 29, 2010.
163. *Physics of Failure Based Reliability Analysis (with Dr. Diganta Das), ICRMS and Sanya, Hainan, China, Dec. 23-24, 2010.
164. *Advances in the Reliability of Lead-free Solders, Emerson, Hong Kong, Dec. 21, 2010.
165. * Prognostics and Systems Health Management for Improved Reliability, **Keynote speaker**, 7th China Manufacturing Management International Forum, Tianjin, China, Oct. 29, 2010.
166. * "Information Systems Safety and Availability – A New Time-Bomb". **Keynote address**, World Congress on Engineering Asset Management (WCEAM), Brisbane, Australia, Oct. 25, 2010.
167. * Prognostics and Systems Health Management for Improved Reliability, **Keynote address**, Electronic Systems, Institute for International Research XIII Kongres SUR, Poland, Oct. 19, 2010.
168. * Prognostics and Systems Health Management for Improved Reliability, **Keynote address**, International Education Forum on Reliability and Systems Engineering (IEFR&SE), Beihang University, Beijing, China, Oct. 15, 2010.
169. *Analyzing UA and Intermittent Failure Mechanisms, Committee on Electronic Vehicle Controls and Unintended Acceleration, The National Academies, Transportation Research Board, Washington, DC, June 20, 2010.
170. *Prognostics for Improved Qualification, presentation to Nissan, Japan, May 14, 2010.
171. *Prognostic Methods for IGBT Qualification, Japanese Society of Mechanical Engineering Consortium Meeting, Tokyo, Japan, May 11, 2010.
172. *Self-Cognizant Electronics for Long Life Reliability, Japanese Society of Mechanical Engineering Conf. on Long Life Project, Tokyo, Japan, May 10, 2010.
173. Power Electronics Prognostics, GE Global Research Workshop on Power Electronics Packaging & Reliability, Bangalore, India, Feb. 25, 2010.
174. *What's Happening with Electronic Product Reliability? **Keynote address**, the Maintenance & Reliability Conf. (MARCON 2010), Knoxville, TN, Feb 17, 2010.
175. *Does the Electronics Industry Need a New Approach to Qualification? **Keynote address**, Int'l Conf. on Electronics Packaging, Sapporo, Japan, Jan. 12-14, 2010.
176. Avionic PHM, the AVIC SAC/TC427 National Technical committee 427 on Process Management for Avionics of Standardization Administration of China, China, Jan. 10, 2010.
177. *Advances in Prognostics, Cranfield University, England, Nov. 27, 2009.
178. *Monitoring the Health of Electronic Systems, EADS, France, Nov. 26, 2009.
179. *Advanced Life Cycle Engineering, German Military COG, Munich, Germany, Nov. 25, 2009.
180. *Reliability Prediction Methods: What We Should Use and Not Use, IEEE Reliability Seminar & Workshop, University of Greenwich, London, UK, Sept 14, 2009.
181. *Health Management and Prognostics, GM Vehicle Health Management Workshop, Bangalore, India, Aug. 26, 2009.
182. A New Paradigm of Electronic Products Assessment, 2009 Int'l Conf. on Electronic Packaging Technology & High Density Packaging, Beijing, China, Aug. 10, 2009.
183. Prognostics and Health Management Special Forum, 2009 8th Int'l Conf. on Reliability, Maintainability and Safety (ICRMS 2009), Chengdu, China, July 20-24, 2009.
184. *Prognostics and Health Management Research, Technical University of Ostrava, Ostrava, Czech Republic, July 16, 2009.
185. *Prognostics and Health Management, Vehicle Maintenance & Repair Conference 2009, London, UK, July 14-15, 2009.
186. *Monitoring the Health of Products, University of Greenwich (Old Royal Naval College), UK, July 13, 2009.
187. *Prognostics and Health Management, National Semiconductor Corp., Hong Kong, July 8, 2009.

188. *Prognostics and Health Management, Huazhong University of Science and Technology, Wuhan, China, May 14, 2009.
189. *Prognostics and Health Monitoring for Improved Qualification, EuroSimE 2009, Netherland, April 27-29, 2009
190. Prognostics Implementation in Aerospace Applications, Condition-Based Maintenance and Health and usage Monitoring Symposium, Shrivenham, UK, April 21-22, 2009.
191. A New Perspective on Electronic Product Reliability, City University of Hong Kong, April 3, 2009.
192. *Prognostics and Health Management, CAPE, Beijing, China, March 2009.
193. *Prognostics and Health Management, Beihang University, Beijing, China, March 2009.
194. *Prognostics and Health Management, CEPREI, Guangzhou, China, March 2009.
195. *A New Approach to Qualification Testing, **Keynote Speech**, Electronics Packaging Technology Conference (EPTC) 2008, Singapore, Dec. 10, 2008.
196. *Health Management and Prognostics, **Keynote Speech**, 4th Dresden Airport Seminar, Structural Health Monitoring (SHM) and its Resources, Dresden, Germany, Nov. 6, 2008.
197. WCEAM Conference, Beijing, China, Oct. 27, 2008.
198. *A New Approach to Qualification Testing, **Keynote Speech**, IMPACT/EMAP, Taipei, Taiwan, Oct. 24, 2008.
199. Counterfeit Electronics, 2008 Fleck Connection Congress, Las Vegas, NV, Oct. 9, 2008.
200. *Health Management and Prognostics, IPC Midwest Conference, Schaumburg, IL, Sept. 20-25, 2008.
201. Prognostics-based Product Qualification for Advanced Microelectronic Systems, HKUST, Hong Kong, August 8, 2008.
202. *Advanced Prognostic Techniques, Beihang University Reliability Conference, Beijing, China, June 19, 2008; City University Quest Lecture, Hong Kong, June 23, 2008; Tayoma Prefecture University, Japan, June 25, 2008; NEC, Japan, June 26, 2008; IHI, Japan, July 15, 2008; Honda, July 17, 2008; Denso, July 18, 2008; Nissan, July 22, 2008; and Fujitsu, July 24, 2008.
203. *Reliability Engineering in the Next Generation, **Keynote Speech**, The 2nd IEEE International Conference on Secure System Integration and Reliability Improvement (SSIRI 2008), July 14, 2008.
204. *Key Reliability Challenges in Electronic Products and Systems, **Keynote Speech**, IEEE Safety and Security Conference, Japan, July 14, 2008.
205. *Advanced Prognostic Techniques, Hong Kong, China, June 23, 2008.
206. *Advanced Prognostic Techniques for Aerospace Applications, China Aerospace Institute, Shenyang, China, June 18, 2008.
207. *Advanced Prognostic Techniques for Aerospace Applications, CAPE, Beijing, China, June 17, 2008.
208. *Key Reliability Challenges in Telecommunications, Datung, Beijing, China, June 16, 2008.
209. *A New Approach to Qualification Testing, **Keynote Speech**, IEEE Int'l Reliability Physics Sym., Phoenix, AZ, April 29, 2008.
210. *A Modern Perspective of Conductive Filament Formation, TRW, MI, Dec 18, 2007.
211. *Contamination Induced Failures of Electronics, WL Gore, MD, Dec 17, 2007.
212. *Advanced Prognostic Techniques, JiaoTong University, Shanghai, China, Dec 9, 2007.
213. *Prognostics for Automotive Electronics, GM Conference on Diagnostics and Prognostics, Bangalore, India, Dec 3, 2007.
214. *Advanced Prognostic Techniques, GM internal R&D Conference on Diagnostics and Prognostics, Bangalore, India, Dec 1, 2007.
215. *Advances in Electronics Reliability, Microsoft, Shenzhen, China, Nov 29, 2007.
216. *China's Electronics Industry - What are the Risks to US Companies and Consumers, Dallas IEEE Reliability Society/Texas EDFAS Meeting, Richardson, TX, Nov. 15, 2007.
217. *The Use of Prognostics in Electronic Product, Int'l Microsystems, Packaging, Assembly and Circuits Technology Conference, Taipei, Taiwan, Oct. 1, 2007.
218. *New Methods to Predict Reliability of Electronics, **Keynote Speech**, MicroNanoReliability 2007, Berlin, Germany, Sept. 3, 2007.
219. Tin Whiskers: How to Mitigate and Manage the Risks, SMTA, China South Technical Conference, Shenzhen, China, August 27, 2007.
220. *New Methods to Predict Reliability of Electronics, **Keynote Speech**, ICRMS'2007, Beijing, China, August 23, 2007.
221. *Predicting the Reliability of Electronic Products, **Keynote Speech**, ICEPT 2007, Shanghai, China, August 15, 2007.
222. Electronic Product Reliability Diagnostics and Prognostics, City University of Hong Kong, August 3, 2007.
223. Data Analysis for System Reliability Diagnostics and Prognostics, Yokohama University, Japan, July 19, 2007.
224. *Tin Whiskers: How to Mitigate and Manage the Risks, **Keynote Speech**, 2007 International Sym. on High Density Packaging and Microsystem Integration (HDP'07), Shanghai, China, June 27, 2007.

225. Electronic PHM, GE Global Research PHM Conference, Niskayuna, NY, May 30, 2007.
226. IEEE 1413.1 - A Guide for Selecting and Using Reliability Predictions, Reliability Prediction- Understanding Techniques, Standards & the New Challenges, Institut Aeronautique et Spatial (IAS), Toulouse, France, May 4, 2007.
227. Prognostic Health Management, Reliability Prediction - Understanding Techniques, Standards & the New Challenges, Institut Aeronautique et Spatial (IAS), Toulouse, France, May 3, 2007.
228. Prognostics and Health Monitoring - The Brave New World, Health & Usage Monitoring & Condition-based Maintenance Sym., Defence Academy of the United Kingdom, Shrivenham, UK, May 1, 2007.
229. Prognostics Health Management, Defense Maintenance & Repair Conference, Arlington, VA, March 6-8, 2007.
230. Tin Whisker Bridging Across Electrical Conductors, 2nd International Eco-Electronic Conference, Beijing, China, December 7, 2006.
231. *IEEE Reliability Prediction Standards and the Handbook based Reliability Prediction Methods, Reliability Prediction for Military Electronic Equipment and Systems, Beijing, China, December 6, 2006.
232. *Electronic Health Monitoring, Emerson Materials and Manufacturing Forum, Coronado Springs, FL, November 8, 2006.
233. *Prognostics Health Management, Halliburton Reliability Conference 2006, Houston, TX, November 1, 2006.
234. *Providing the End-to-End Connection for the Sustainment Value Chain, 2006 DoD Maintenance Symp., Reno, NV, October 24, 2006.
235. *Prognostics and Sense and Respond Logistics, 2006 DoD Maintenance Symp., Reno, NV, October 23, 2006.
236. *Enabling Electronic Prognostics Using Thermal Data, 12th Int'l Workshop on Thermal Investigations of ICs and Systems (THERMINIC 2006), Nice, France, Sept. 27, 2006.
237. Today's and Future Challenges Concerning Lead-free Electronics, **Keynote Speech**, 1st Electronics System Integration Technology Conf. (ESTC 2006), Dresden, Germany, Sept. 6, 2006.
238. Advances in Prognostics for Electronic Products and Systems, 2006 Int'l Military & Aerospace/Avionics COTS Conference, Aug. 22, 2006.
239. Tin Whiskers: How to Mitigate and Manage the Risks, 2006 Int'l Military & Aerospace/Avionics COTS Conference, Aug. 21, 2006.
240. *Prognostics and Health Management, Prognostics and Health Management Sym., **Keynote Speech**, Exeter, UK, July 9, 2006.
241. *Accelerated Testing: Ways to Understand Reliability Quickly and Accurately, **Keynote Speech**, IMAPS-Taiwan 2006 Int'l Technical Sym., Taipei, Taiwan, June 30, 2006.
242. *Advances in Canaries, Precursors, and Physics-of-Failure Based Prognostic Techniques in Fielded Electronics Applications, Lockheed Martin Prognostics and Health Management Conference, Bethesda, MD, June 7, 2006.
243. A New Prognostics Method for Extending the Life of Legacy Systems, IMAPS Topical Workshop on Military, Aerospace, Space and Homeland Security: Packaging Issues and Applications (MASA 2006), Washington, DC, June 7, 2006.
244. *Prognostics for Electronics, 2nd Annual Raytheon Enterprise Logistics Solutions Conf., Manhattan Beach, CA, May 17, 2006.
245. *Prognostic Technology Benchmarking, EADS, Paris, France, Feb. 28, 2006.
246. *Theory and Practice of Prognostic and Health Management, Reliability 2006 Conference, Seoul, Korea, Feb. 21, 2006.
247. *The Impact of the Growing Chinese Electronics Industry on the Future of Aerospace, Boeing, Seattle, WA, Dec. 21, 2005.
248. *The Story Behind the Red Phosphorus Mold Compound Device Failure, **Keynote Lecture**, EMAP 2005, Tokyo Institute of Technology, Tokyo, Japan, Dec. 12, 2005.
249. *Prognostics and Health Monitoring, Mirce Academy, Exeter, UK, Nov. 30, 2005.
250. *Health Monitoring of Electronic Systems, Airbus, Bristol, UK, Nov. 29, 2005.
251. *Market Access and Electronics Products Development in China, United Nations, Geneva, Switzerland, Nov 24, 2005.
252. *IC Reliability in Low Volume Production, DoD Advisory Committee on Electron Device (AGED), Nov. 26, 2005
253. What are the Proper Accelerators for Predicting the Reliability of Active Implantable Medical Devices? Workshop on Measurement Methods for Evaluation of the Reliability of Active Implantable Medical Devices, NIST, Gaithersburg, MD, October 4, 2005.
254. *China's S&T Policy, **Keynote Speech**, For China Industry and Government Directors Meeting, University of Maryland, Sept 29, 2005.
255. *Theory and Practices of Prognostics Health Management, **Keynote Speech**, China Government, Industry and University workshop, Beijing, China, Sept. 5, 2005.
256. Health Monitoring of Electronic Products, Yokohama National University, Yokohama, Japan, Jan. 19, 2005.

257. Long-term Lead-free Product Analysis, JEITA, Japan, Jan 18, 2005.
258. Using Failure Mechanism Based Analysis for Physics-of-Failure assessment, Toshiba, Japan, Jan. 18, 2005.
259. China's Electronics Industry, Fleck Connection Congress, Anaheim, CA, October 28, 2004.
260. *Advances in Reliability and Maintainability Research, **Keynote Speech**, 6th Int'l Conf. on Reliability Maintainability & Safety, Xi'an, China, Aug. 26, 2004.
261. Sensors, NEMI 2004 Technology Roadmap Workshop, Washington, DC, June 23, 2004.
262. Reliability of Lead-free Electronics, 2004 Int'l Conf. Addressing on WEEE & RoHS Directives & the Third Int'l Conf. on WEEE Recycling, Guangzhou, China, June 11, 2004.
263. *Product Reliability and Liability: Business and Legal Aspects of Product Procurement, 2004 Int'l Conf. on the Business of Electronic Product Reliability and Liability, Shanghai, China, April 29, 2004.
264. *The Reliability of Next Generation Electronics, **Keynote Lecture**, Materials Congress 2004, London, UK, March 30, 2004.
265. *IEEE 1413 and Reliability Prediction Methods, JSME, Japan, Jan. 16, 2004.
266. *Auditing the Reliability Capability of Electronic Manufacturers, Tokyo Institute of Technology, Tokyo, Japan, Jan. 15, 2004.
267. In-situ Health Monitoring of Electronics, National Central University, Taiwan, Dec. 29, 2003.
268. * Reliability Analysis and Prediction Methods, Shanghai Jiao Tong University, Shanghai, China, October 23, 2003.
269. * Electronics Aging Assessment and Prediction, Workshop on Aging and Long-term Reliability of Microelectronics Materials and Devices (sponsored by the Air Force Office of Scientific Research), Vanderbilt University, Nashville, TN, October 9, 2003.
270. * Lead-Free Solder Patents, Emerson Lead-Free Solder Sym., Aug 21, 2003; IPC/Maxtor Conf., Aug. 20, 2003; also IEEE Public Lecture, Hong Kong, June 24, 2003; also Shenzhen, China, July 2, 2003; also IEEE Int'l Conf. on Electronics Packaging, Tokyo, Japan, April 17, 2003.
271. * The New IEEE Reliability Prediction Standards, UK Ministry of Defense Reliability Conf., April 3, 2003.
272. Upgrading: the Dilemma between Semiconductor Manufacturers and Users, Commercialization of Military & Space Electronics Conf., Los Angeles, CA, Feb. 11, 2003.
273. * Auditing the Reliability Capability of Electronics Manufactures, **Keynote Presentation**, Int'l IEEE Conf. on the Business of Electronic Product Reliability and Liability, Hong Kong, Jan. 14, 2003.
274. * The New IEEE Standards on Reliability Program and Reliability Prediction Methods for Electronic Equipment, City University of Hong Kong, Hong Kong, Jan. 9, 2003.
275. * The Technical, Social and Legal Outlook for Lead-Free Solders, **Keynote Presentation**, IEEE Int'l Sym. on Electronic Material and Packaging, Kaoshiung, Taiwan, Dec. 3-6, 2002.
276. * Challenges for Adopting Pb-Free Interconnects for "Green" Electronics, **Key-Note Presentation**, IPC/JEDEC Int'l Conf. on Lead-Free Electronic Components and Assemblies, Taipei, Taiwan, Dec. 10-12, 2002.
277. * IEEE Reliability Prediction Standard for Devices and Systems, **Keynote Presentation**, ESREF Int'l Conf., Rimini, Italy, Oct 7-11, 2002.
278. Sensors Used for Health Monitoring of Electronic Products and Systems, National University of Singapore, Singapore, July 24, 2002.
279. Mechanics Solution-Methodologies to Electronic Packaging, Cambridge University, UK, July 4, 2002.
280. * Reliability of Electronics and Photonics-Components and Systems, **Keynote Presentation**, EPPIC Conf., Scotland, UK, July 3, 2002.
281. * In-situ Semiconductor Health Monitor for Product Reliability Monitoring, **Keynote Presentation**, IEEE/SPIE Design, Test, Integration and Packaging MEMS/MoEMS, Cannes, France, May 6-8, 2002.
282. * Life Consumption Monitoring, **Keynote Presentation**, UK-Ministry of Defense R&M Specialists' Seminar, Malvern, United Kingdom, April 25-26, 2002
283. The Business, Product Liability and Technical Issues Associated with Using Electronic Parts Outside the Manufacturer's Specified Temperature Ranges, City University of Hong Kong, Hong Kong, March 4, 2002
284. * The Business, Product Liability and Technical Issues Associated with Using Electronic Parts Outside the Manufacturer's Specified Temperature Range, **Keynote Presentation**, Pan Pacific Microelectronics Sym. and Tabletop Exhibit, Maui, HI, pp. 391-398, Feb. 5-7, 2002.
285. Capturing the Benefits of Disruptive Innovation in E-Business Supply Chain Management, 2001 Int. Conf. on Supply Chain Management and Information Systems, Hong Kong, Dec. 14-18, 2001.
286. * Electronics Reliability Engineering in the 21st Century, **Keynote Presentation**, The 3rd Int'l Sym. on Electronic Materials and Packaging 2001, Jeju Island, Korea, Nov. 18-23, 2001.
287. Electronics R & M - Physics of Failure, Lecture, Istanbul Technical University of Turkey, Turkey, July 27, 2001.
288. Electronics Reliability Engineering in the 21st Century, Public Lecture, City University of Hong Kong, Hong Kong, China, June 29, 2001.

289. China's Semiconductor Industry, Electronic Packaging Industry Development in China, Taiwan, and Hong Kong Sym., Shanghai, China, April 2, 2001.
290. Reliability in the New Millennium, Festschrift Conf., University of Wisconsin; Sept. 29 - 30, 2000.
291. Writing in the Brave New World; Professional Writing Program - Fall Faculty Development Day, University of Maryland, Aug. 29, 2000.
292. Preparing for a Time-to-Profit Economy, Feddersen Distinguished Lecture in Mechanical Engineering, Purdue University, West Lafayette, IN, Feb. 21, 2000.
293. Reliability of Electronic Products in the 21st Century, Motorola, IEEE CPMT Society, IL, July 28, 1999.
294. Electronic Devices for Reliable Defense Applications, US Office of Secretary of Defense (OSD), July 23, 1999.
295. COTS Analysis Methods, DoD Scientific Advisory Board Meeting on COTS, Reston, VA, June 8, 1999.
296. * Virtual Component Qualification, **Keynote Presentation**, MSM '99, Puerto Rico, April 1999.
297. Reliability of Electronic Devices for Defense Applications, Reliability STAR, Palisades Institute, Arlington, VA, Feb. 23, 1999.
298. Reliability in the 21st Century, Focus on Electronic Products and Systems, IEEE Boston Reliability Chapter, Dec 9, 1998.
299. Characterization of Plastic Encapsulant Materials as a Baseline for Reliability Testing-Moisture Content and Ionic Contamination, POLY '98, The Electrical and Electronic Packaging Division, ASME Int'l, Dec. 1, 1998
300. Recent Developments in China's Electronic Industry, ISEPT '98, Beijing, China, Aug. 17-21, 1998.
301. Strategies for Rapid Technology Implementation, SEMICON/WEST 98, Semiconductor Equipment and Materials Int'l, July 15, 1998.
302. Invited speaker on NEWSNIGHT MARYLAND, Maryland Public Television, June 8, 1998.
303. Plastic Packages - Status and the Future, The Reliability Challenge, Dublin, Ireland, May 19, 1998.
304. Moving Toward Virtual Qualification, Dependability '98, Ottawa, Canada, May 12-14, 1998.
305. Reliability Assessment Trends for the 21st Century, Electronic Packaging 1998, Stockholm, Sweden, March 17 1998.
306. Decreasing the Time-to-Market Through Virtual Risk Assessment and Risk Mitigation, Smiths Industries, Clearwater, FL, Feb. 10, 1998.
307. Decreasing the Time-to-Market Through Virtual Risk Assessment and Risk Mitigation, Harris Semiconductors, Palm Bay, Melbourne, FL, Jan. 8-9, 1998.
308. Decreasing the Time-to-Market Through Virtual Risk Assessment and Risk Mitigation, NAE: National Materials Advisory Board: Irvine CA, Nov. 13-14, 1997.
309. Reducing Qualification Time for Higher Reliability Microelectronics Packages and Interconnects, Key Development Series in Microelectronics & Electronic Packaging Workshop, ISHM-IMAPS, Santa Fe, NM, Nov. 12, 1997.
310. Accelerated Risk Assessment and Mitigation, Nokia Research Center, Finland, Oct. 2, 1997.
311. Design for Quality and Reliability, Compaq Computer Corp., Houston, TX, Sept. 26, 1997.
312. Electronics as an Integrated Technology Across Engineering Disciplines, Joint ASME-IEEE Lecture Series, Houston, TX, Sept. 25, 1997.
313. * The Developing Electronics Device Market Place and its Impact on Procurement and Reliability, **Keynote Presentation**, The Royal Aeronautical Society, London, UK, Sept. 18, 1997.
314. * Decreasing the Time-to-Market Through Virtual Risk Assessment and Risk Mitigation, **Keynote Presentation**, 21st Int'l Conf. on Microelectronics, Nis, Yugoslavia, Sept. 16, 1997.
315. Moisture Results, BGA Substrate PTAB Meeting, Sematech, Durham, NC, Aug. 6, 1997.
316. Decreasing the Time-to-Market Through Virtual Risk Assessment and Risk Mitigation, Strategic Research Program Seminar, Nanyang Technological University, Singapore, July 23, 1997.
317. * Decreasing the Time-To-Market through Virtual Risk Assessment and Risk Mitigation, **Keynote Presentation**, InterPak '97, Island of Hawaii, HI, June 16, 1997.
318. Southeast Electronics Industry, InterPACK 1997, Mauna Lani, Kohala Coast, Island of Hawaii, June 15-19, 1997.
319. Long Term Dormant Storage Modeling of Plastic Encapsulated Microcircuits, Army-Micom, June 4, 1997.
320. Rapid and Effective Reliability Risk Assessment and Risk Mitigation, Motorola Corporate Engineering Council 1997 Simulation and Modeling for 10X Cycle Time Reduction Sym., Chicago, June 3, 1997.
321. Obtaining Electronic Systems Quality and Reliability in the 21st Century, Computing Devices Int'l, Bloomington, MN, May 19, 1997.
322. Reliability Test Planning, Sematech and IPC Substrate PTAB Meeting, Austin, TX, April 29, 1997; also Denver, CO, Feb. 6, 1997.
323. Obtaining Quality and Reliability in Automotive Industry, GM, Warren, MI, April 18, 1997.
324. Technology Reinvestment Project - Work Force Retraining in Manufacturing Science and Engineering of Cost-effective and Reliable Electronics, NSF Engineering Education Innovators' Conf., Arlington, VA, April 8, 1997.

325. R&M Within the 'Tiger Economy' Nations of the Pacific Rim, MoD Reliability and Maintainability Specialists Seminar, Oxfordshire, England, March 13-14, 1997.
326. The Electronic System Development in the 21st Century, Johns Hopkins University, March 10, 1997.
327. Reliability Modeling and Testing, Second Joint Conf. on Electronic Packaging Education, Ithaca, NY, Sept. 30 - Oct. 1, 1996.
328. Introduction and Background of Boeing ECMP Philosophy, Smiths ECMP Meeting, Malvern, PA, Sept. 19, 1996.
329. Materials Information for the Electronics Industry, NIST Metallurgy Division Strategic Planning Session for Data Projects/Programs, Gaithersburg, MD, Sept. 5, 1996.
330. Issues in the Long Term Dormant Storage of PEMs, 1996 Advanced Electronics Acquisition, Qualification, and Reliability Workshop, Schaumburg, IL, Aug. 21-23, 1996.
331. Reliability Issues in Thermal Design, National Heat Transfer Conf., Houston, TX, Aug. 3-6, 1996.
332. ASA Electronic Business in Transition Military to Non-Mil. Parts Allied Signal Phoenix, AZ, June 6, 1996.
333. Shattering the Myths of Electronic Reliability, 1996 Spring Quarter Woodruff Seminar Series, Georgia Institute of Technology, Atlanta, GA, May 23, 1996.
334. Plastic Encapsulated Microcircuits, The Hardness Assurance Committee of the NASA/AFSMC Space Parts Working Group, Alexandria, VA, May 20-22, 1996.
335. Physics of Failure and Environmental Effects, 43rd Institute of Environmental Sciences Annual Technical Meeting and Expo, Los Angeles, CA, May 15, 1996.
336. * The Next Decade of Reliability Engineering, **Keynote Presentation**, Ministry of Defence R&M Specialists Seminar, Steeple Aston, Oxon, England, March 28, 1996.
337. Shattering the Myths of Electronics Reliability, National Center for Ultra-Reliability Engineering (Strategic Surety) Seminar, Sandia Labs, Albuquerque, NM, March 21, 1996.
338. The Part Selection Processes, Semiconductor Industry Association (SIA) Government Procurement Committee Meeting, Seattle, WA, Feb. 26, 1996.
339. Reducing the TimetoMarket Using Simulated Qualification, IBM, Poughkeepsie, NY, Feb. 21, 1996.
340. * Cost-effective Reliability Assessment, **Keynote Presentation**, ISHM - India, EMIT 1996, Bangalore, India, Feb. 14, 1996.
341. Cost-effective Reliability Assessment, High Density Packaging User Group, Palo Alto, CA, Feb. 6, 1996.
342. Popcorning in Full and Perimeter Plastic Ball Grid Array Packages during IR Reflow Soldering, Munamarty, R. and M. Pecht, Area Array Packaging Technologies, Workshop on Flip Chip and Ball Grid Arrays, Berlin, Germany, Nov. 13-15, 1995.
343. Can We Build-in Reliability Without Physics of Failures? **Keynote Presentation**, 1995 IEEE Int'l Integrated Reliability Workshop, Lake Tahoe, CA, Oct. 22-25, 1995.
344. * Bringing An Electro-Technology To Market, **Keynote Presentation**, Micro-Integrated Smart Materials and Structures Conf., (MISMISC), Williamsburg, VA, Oct. 12, 1995.
345. Attaining High Reliability in Low-Cost Electronic Systems, Thermal Management of 21st Century Electronic Systems Center for the Development of Technological Leadership, NSF Workshop, Minneapolis, MN, Oct. 10, 1995.
346. * Advances in Heat Transfer, **Keynote Presentation**, Fourth Int'l Flotherm User Conf., San Jose, CA, Oct. 4, 1995.
347. * Temperature As a Reliability Factor, **Keynote Presentation**, Eurotherm Conf. No. 45, Leuven, Belgium, Sept. 19-23, 1995.
348. Packaging Research Efforts at the University of Maryland Packaging Research Center, Motorola Semiconductor Packaging Technology Steering Committee Meeting, Arlington Heights, IL, July 18, 1995.
349. Japanese Government and Industry Collaboration in Electronic Packaging R&D, Semicon/West 95, San Francisco, July 6-13, 1995.
350. Problems and Alternatives to NASA's Component Reliability Assessment Methodology, CIMSS/SSEC Seminar, Madison, WI, July 7, 1995.
351. Physics of Failure Reliability Methods, General Motor's NAO Technical Center, Warren, MI, June 15, 1995.
352. Influence of Fiber Glass-Resin Interface on Reliability of Electronic Packaging Laminates, Fiber Glass Research Center Technical Seminar, O'Hara, PA, April 27, 1995.
353. Research in the Design of Reliable Electronic Products, Delco Electronics, Kokomo, IN, April 19, 1995.
354. Advances in the Design and Assessment of Reliable Microelectronics, ETRI, KAIST, Korea, April 3, 95; also LG Semicon, Korea, April 4, 1995; also Daewoo Electronics, Korea, April 6, 1995.
355. Int'l Developments in Packaging Technology, panel speech, Int'l Intersociety Electronic Packaging Conf., HI, March 29, 1995.
356. * Physics of Failure, **Keynote Presentation**, Ministry of Defence R&M Specialists' Seminar, Steeple Aston, Oxon, United Kingdom, March 2-3, 1995.

357. Recent Trends in the Design and Qualification of Electronic Products, Motorola Corporate Manufacturing Research Center (CMRC), Schaumburg, IL, Nov. 22, 1994; also Motorola, Phoenix, AZ, Nov. 28, 1994.
358. Recent Trends in the Design and Qualification of Electronic Products, Dy4 Systems, Inc., Ontario, Canada, Nov. 4, 1994.
359. Comparison of Electronic Packaging Trends in the U.S. and Southeast Asia CALCE EPRC Research Review Meeting, October 19-21, 1994.
360. Reliability Program Standard to Replace Mil-Std-785, EIA G-41 R&M Committee, Fall 1994 Meeting, College Park, MD, Oct. 17, 1994.
361. A Physics-of-Failure Approach to Addressing Device Reliability in Accelerated Testing, Lall, P. and M. Pecht, 5th European Sym. on Reliability of Electron Devices Failure Physics and Analysis, Glasgow, Scotland, Oct. 4-7, 1994.
362. * Success Factors in the Malaysian, Taiwanese and Japanese Electronics Industry, **Key-Note Presentation**, Surface Mount Int'l Conf. & Exposition, San Jose, CA, Aug. 28 - Sept. 1, 1994.
363. Computational Methods to Address Reliability of Electronic Packaging, The Third World Congress on Computational Mechanics, Chiba, Japan, Aug. 1-5, 1994.
364. Possible Missed Opportunities for the Use of PEMs by the Military, Office of Secretary of Defense, Case Studies Sym. on the Successful Use of Commercial Integrated Circuits in Military Applications, June 13-15, 1994.
365. Commercial Versus Military Practices, panel and open forum, 40th Institute of Environmental Science Annual Technical Meeting and Expo, Chicago, IL, May 3, 1994.
366. Dual Use GaAs Technology: A Reliability Approach, 1994 U.S. Conf. on GaAs MANufacturing TECHNOLOGY, Tropicana, Las Vegas, NV, May 1-5, 1994.
367. A Computerized Physics-of-Failure Approach to Reliability Assessment, 1994 Utica Conf. & Technology Expo, Springfield, MA, April 28, 1994.
368. The Influence of Temperature on Integrated Circuit Failure Mechanisms, MCC, Austin, TX, March 22, 1994.
369. A Physics-of-Failure Approach to Reliability Assessment, ESL, San Jose, CA, March 2-3, 1994.
370. Design & Verification of Safe, Reliable and Robust Airplane Systems, 40th Reliability and Maintainability Sym., Anaheim, CA, Jan. 27, 1994.
371. A Physics-of-Failure Approach to Derating, SRC Electronic Packaging Program Kick-off Meeting, Atlanta, GA, Jan. 14, 1994.
372. Design and Simulation Tools for Electronics Packaging, Industry/University Case Study Panel II: Design and Integration Engineering, 1994 NSF Design and Manufacturing Grantees Conf., MIT, MA, Jan. 5-7, 1994.
373. The Physics-of-Failure Approach, NASA Johnson Space Flight Center, Houston, TX, Dec. 22, 1993.
374. Lall, P., Pecht, M., Cushing, M. and T. Stadterman, Physics-of-failure Based Computer Tools for the Design of Microelectronic Packages, 1993 Avionics Conf. and Exhibition, London, UK, Dec. 1-2, 1993.
375. IEEE Reliability Program Standard: Revising MIL-STD-785, New Directions in Military Reliability Availability and Maintainability (RAM) Symp: The American Defense Preparedness Association, Aberdeen Proving Ground, MD, Oct. 19, 1993.
376. Rudra, Balu and M. Pecht, Conductive Filament Formation: A Focus on MCM-L Substrates, IPC Fall Meeting, Washington, DC, Oct. 1993.
377. M. Pecht, Reliability Issues for MCM-L, IPC Short Course, IPC Fall Meeting, Washington, DC, Oct. 1993.
378. M. Pecht, Computer-Aided Reliability, Design and Assessment of MCMs: A Physics of Failure Based Approach, 1993 Advanced Microelectronics Qualification/Reliability Workshop, Denver, CO, Aug. 24-26, 1993.
379. Best Commercial Parts and Practice Seminar, Honeywell Inc., Clearwater, FL, Aug. 17, 1993.
380. Electronics Reliability Trends, Indian Government Electronics, SAMEER, Bombay, India, Aug. 5, 1993.
381. Advances in the Design and Assessment of Reliable Electronics Using Concurrent Engineering, U.S./R.O.C. Workshop on Automation and Productivity for Small to Medium Scale Manufacturing Industry, July 1993.
382. Avionics Design Process: Military and Commercial, NAECON 93, Dayton, OH, May 24-27, 1993.
383. A Changing Paradigm in the Design of Reliable Electronics, United Technologies Engineering Coordination Activities (UTECA) Conf., April 29, 1993.
384. Reliability Assessment of Plastic Packages, Litton Quality and Reliability Seminar, Greenbelt, MD, April 20, 1993; also DoD Workshop on Plastic Packages, Bloomington, IN, Nov. 4-5, 1992.
385. Reliability Assessment for Predictive Maintenance, Martin Marietta Energy Systems, Second Annual Prediction Maintenance Forum, Knoxville, TN, March 25, 1993.
386. Future Trends in Plastic Packaging, 39th Reliability and Maintainability Sym., Atlanta, GA, Jan. 25, 1993.
387. Needed Change in Military Standards, Quality Day, RAFAEL Ministry of Defense, Haifa, Israel, Nov. 14, 1992; also AGED STAR Workshop, Alexandria, VA, March 2-5, 1992.
388. Electronics R & M - Physics of Failure, Lecture, MIRCE Akademy, Exeter, UK, July 23, 2001.
389. Thermal Challenges in Electronics Packaging, ASME Winter Annual Meeting, Anaheim, CA, Nov. 8-12, 1992.

390. Influence of Temperature on Microelectronic Device Failure Mechanisms, Keynote Speaker: IEEE-ISHM-IEPS Advanced Technology Workshop, Aug. 25, 1992.
391. The Physics-of-Failure Approach to Multi-chip Module Design and Assessment, Nippon Steel-Electronics, Tokyo Japan, July 27, 1992, Toshiba, Kawasaki, Japan, July 28, 1992, Matsushita Electric Works, Osaka, Japan, July 29, 1992, Matsushita Electric Industries, Osaka, Japan, July 30, 1992, Matsushita Electric Corporation, Osaka, Japan, July 31, 1992.
392. Pecht, M. and M. Cushing, Should MIL-STD-785 Have A More Science-Based Foundation, Proc. American Defense Preparedness Association Sym., pp. 76-87, Aberdeen, MD, June 16-17, 1992.
393. Round Table on Multi-chip Modules, SME Round Table, Mansfield, MA, June 23, 1992.
394. Cost Effective Design of Reliable Electronic Equipment, for AMSAA Senior Analysts Review, Aug. 12-13, 1992; Comanche PMO and Contractors, May 7, 1992; Darold Griffin, PADRA, AMC HQ, May 7, 1992; Walt Hollis, Deputy Undersecretary of Defense Army, April 17, 1992; Brig. General Mullen, April 4, 1992; Stephen Burdt, Pentagon, April 24, 1992; Mr. Vitali, LABCOT Technology Director, Jan. 8, 1992.
395. An Electronics Packaging Compiler, MCM Workshop, Navy EMPF, IN, Feb. 18-19, 1992; also DARPA-MADE Workshop, Salt Lake City, UT, Jan. 26-28, 1992.
396. Integrating Thermal Analysis of Electronics with Design, ASME Winter Annual Meeting, Atlanta, GA, Dec. 1-6, 1991.
397. Software for Concurrent Engineering, NASA Electronic Packaging and Processes Working Group, Nov. 22, 1991; also State of Maryland Technology Forum, Nov. 6, 1991.
398. Manufacturing in Education and Research, ASEE Middle Atlantic Fall Meeting, College Park, MD, Nov. 2, 1991.
399. MIL-HDBK-217 Issues, Naval Weapons Support Center, Crane, IN, Oct. 31 - Nov. 1, 1991.
400. Pecht, M. and C. Leonard, An Approach to Improved Electronics Reliability, 1991 Advanced Microelectronics Technology Qualification, Reliability, and Logistics Workshop, Seattle, WA, Aug. 13-15, 1991.
401. What Will It Take For The Military to Design Cost-Effective Reliable Products, Engr. For Electronics Design and Production Sym., Bloomington, IN, June 25-27, 1991.
402. Bhandarkar, S., Dasgupta, A., Pecht, M. and D. Barker, Non-Linear Thermo-Mechanical Properties of Fabric Reinforced Printed Wiring Boards, 5th Int'l SAMPE Electronics Conf., June 18-20, 1991.
403. How Failure Prediction Methodology Affects Electronic Equipment, GE Sym. on Reliability in Electronic Systems, Schenectady, NY, June 13-14, 1991.
404. Putting Science Into Reliability Prediction, for Boeing Commercial Airplanes and Boeing Aerospace, June 5-6, 1991.
405. Hu, J. and M. Pecht, Experimental Evaluation of the Mechanical Behavior of GaAs Wafers, Materials Research Society Symp. 8 pages, April 23 - May 3, 1991.
406. Advances in Assessment of Electronics Reliability, Ford Motor Co., Dearborn, MI, April 15, 1993; also Plenary Speaker, 47th Meeting of the Mechanical Failure Prevention Group, Virginia Beach, VA, April 13, 1993; also United Technologies, Hartford, CT, Oct. 24, 1992; also SUNY-Binghamton, Oct. 1, 1992; also Honeywell Reliability Advisory Board Meeting, July 9, 1992; also Dallas IEEE Reliability Society, May 19, 1992; also 25) Institute of Statistical Sciences, Academia Sinica, Taipei, Taiwan, Nov. 27, 1991; also Luncheon Speaker at SEMITHERM VII Sym., Feb. 12-14, 1991.
407. What Every Electrical Engineer Should Know About Mechanical Reliability, IEEE Reliability Society, Baltimore, MD, Jan. 16, 1991.
408. Cooling of Avionics for Tactical Fighter Aircraft, AIAA/ASME Joint Thermophysical Conf., Seattle, WA, June 18-20, 1990.
409. Osterman, M. and M. Pecht, Placement for Reliability Based on Physics of Failure Concepts, 90 IEEE NAECON Conf. Vol. 3, pp. 1021-1027, May 21-25, 1990.
410. Reinhart, H. and M. Pecht, Automated Design for Maintainability, 17th IEEE InterRam Conf., pp. 230-236, June 12-15, 1990; update of, Proc. 90 IEEE NAECON Conf., Vol. 3, pp. 1227-1232, May 21-25, 1990; update of Proc. 6th Annual RAMCAD Conf., pp. 215-238, April 26, 1990.
411. Bhandarkar, S., Dasgupta, A., Pecht, M. and D. Barker, Effects of Voids in Solder Filled Plated Through Holes, IPC Technical Paper TP863, 33rd IPC Conf., April 16, 1990.
412. Computer Aided Life Cycle Engineering of Electronic Equipment, Pecht, M. and R. Porter, NSF Sym. on Industry/University Collaboration: Models for Success, Washington, DC, Feb. 28, 1990.
413. Hevner, A., Basu, A., Pecht, M. and B. Pourbabai, A Methodology for Concurrent Product Development with a Focus on Electronic Products, Proc. Second National Sym. on Concurrent Engineering, Morgantown, WV, Feb. 7-9, 1990.
414. Reliability In Education, 36th Reliability and Maintainability Sym., Los Angeles, CA, Jan. 23-25, 1990.
415. NSF Industry/University Cooperative Research Center Directors, Washington, DC, Jan. 11-12, 1990.
416. CALCE: A Systems Approach to Reliable Electronics Design, Science Council Seminar Series, Martin Marietta Laboratories, Dec. 6, 1989.

417. Current Trends in Reliability Predictions of Electronic Components, Department of Mechanical and Industrial Engineering, SUNY at Binghamton, Oct. 26, 1990; also New Jersey Chapter of the Reliability Society, ITT Avionics Auditorium, Clifton, NJ, Sept. 19, 1989.
418. 217E, AVIP and Beyond, IEEE-ISHM Annual Reliable Electronics Packaging Workshop, College Park, MD, Oct 2-3, 1990, also IEEE R&M Workshop, Taipei, Taiwan, June 1-2, 1990; also Leesburg, VA, Aug. 25-26, 1989.
419. Reliability Engineering Education, Reliability Conf., West Point Academy, NY, Nov. 5, 1989; also USAF RAMCAD Curricula Workshop, Arlington, VA, June 14-15, 1989.
420. Concurrent Design: A Life Cycle Engineering Approach, Digital Equipment Corp., Maynard, MA, Jan. 17, 1989.
421. Azarm, S., Pecht, M., Li, W. and S. Praharaaj, A Decompositionbased Design Optimization Method with Applications, Second NASA/Air Force Sym. on Recent Experiences in Multidisciplinary Analysis and Optimization, pp. 1055-1067, Hampton, VA, Sept. 28-30, 1988.
422. SIG Knowledge Engineering in Mechanical Design and Manufacturing, Minneapolis, MN, Sept. 15-16, 1988.
423. RAMCAD Workshop IV, Westinghouse DEC, Baltimore, MD, June 8-9, 1988.
424. Thermal/Reliability Management, Surface Mount Technology Sym. and Workshop, University of Maryland, April 21, 1988.
425. M. Pecht, Distributed Tasking in RAMCAD, Proc.: 4th Annual RAMCAD Technical Interchange Meeting, San Diego, CA, April 19-20, 1988.
426. M. Pecht, Concurrent Design, CALS EXPO '88, National Institute of Standards and Technology, Gaithersburg, MD., Oct. 4-6 1988; Concurrent Design in RAMCAD, Proc. IEEE 1988 Reliability and Maintainability in Computer Aided Engineering, pp. 4548, Leesburg, VA, Sept. 27-29, 1988, Reliability Integration Techniques In Electronics Design, ASQC and SME Product Assurance Forum '87, Rock Island, IL, Oct. 6-7, 1987.
427. Sawyer, B. and M. Pecht, Database and Process Control for the RAMCAD Workstation Environment, IEEE Workstation Technology and Systems Conf., May 11-12, 1987.
428. Pecht, M., Palmer, M., Sawyer, B., Porter, R. and W. Rivera, Using an Expert System in the Computer Aided Design of PWB's for Improved Reliability, Artificial Intelligence Conf. on The Role of A.I. in Military Systems, Westinghouse Defense Electronics, Baltimore, MD, Dec. 3-5, 1986.
429. An Application of RAMCAD to Printed Circuit Board Design, GTE, Needham, MA, Oct. 24, 1987. Northrop Corporate CAE Group, Hawthorne, CA, July 15, 1987; also RAMCAD A Tool for SecondLevel Electronic Package Design, Devices and Circuits Seminar Series, University of Maryland, Oct. 31, 1986; also The RAMCAD Project, VITRO Corporation, Silver Spring, MD, June 13, 1986 also Computer Aided Printed Circuit Design For Reliability, IEEE Reliability Society, Washington, DC, Mar. 18, 1987; also The ULCE/Landing Gear Design Application, LockheedGeorgia Company Presentations, with Lee Madison (LockheedGA), GA, Mar. 16-17, 1987; also, An Application of RAMCAD to PCB Design, IDA Second RAMCAD Technical Interchange Meeting, Institute for Defense Analyses, Alexandria, VA, Oct. 21-22, 1986.
430. Pecht, M. and E. Vanin, Computer Aided Modeling of the DNA Nucleosome Interaction, Int'l Conf. on Modeling and Simulation, AMSE, Vol. 3, pp. 180-187, Sept. 3-5, 1986.
431. Hsu, G., Palmer, M. and M. Pecht, Simulation of Marangoni Convection in an Electrically Conducting Fluid in the Presence of a Magnetic Field, Int'l Conf. on Modeling and Simulation, AMSE, Vol. 3, pp. 116-128, Sept. 3-5, 1986.
432. M. Pecht, General Design, AAAI Workshop on Knowledge Based Expert Systems for Engineering Design, Lawrence Livermore National Laboratory, Livermore, CA, Aug. 22, 1986.
433. Pecht, M., Osterman, M. and K. Strickler, The Effect of a Varying Moisture Content on the Stress Relaxation Response of Kraft Paper, NSF Workshop on Paper Physics and Int'l Paper Physics, Aug. 10-15, 1986.
434. Advanced Applications of ComputerAided Design Systems, The Leading Edge of Computer Aided Design Sym., College Park, MD, Nov. 15, 1985.
435. Intelligent Design of Printed Wiring Boards, Association for Computing Machinery: 24th Annual Technical Symp: Intelligent Systems, National Bureau of Standards, Gaithersburg, MD, June 20, 1985.
436. Anand, D., Kirk, J., Anjanappa, M., and M. Pecht, Supercomputers and Hierarchical Control: A Systems Viewpoint, Supercomputers in Mechanical Systems, Lawrence Livermore National Laboratory, CA, Sept. 12-14, 1984.
437. HumidityStressStrain Interactions in Corrugated Container Sheets, Technical Association of the Pulp and Paper Industry at the U.S. Department of Agriculture, Forest Products Laboratory, Madison, WI, Feb. 8, 1983; also HumidityStressStrain Interactions in Cellulosic Specimens, Institute of Paper Chemistry, Appleton, WI, Jan. 9, 1983.

National and International Short Courses

1. AI-based Reliability Science, Arcelik Conference, Istanbul, Turkey, October 20, 2019.
2. Advances in Supply Chain Management and PHM, Sodertalje, Sweden, Sept 11, 2018.
3. Probability Distributions, Chinese Academy of Science, Shenyang, China, June 6, 2018.
4. Advances in PHM, ISID short course for Japanese companies, Tokyo, Japan, May 23, 2018.
5. Supplier Trust: presentation for Emerson (online), May 14-15, 2018.
6. Advances in Reliability: short course for Abbott Medical, Los Angeles, April 12, 2018.
7. Advances in Reliability: short course for Roketsan, Ankara, Turkey, Nov. 21-22, 2016.
8. Advances in Reliability: short course for Philips Medical, Oct. 28, 2016.
9. Electronics Reliability: A Science and Technology Issue or a Supply Chain Issue?, Sandia National Labs, New Mexico, Sept. 13, 2016.
10. Fundamentals of Reliability Engineering, for Chinese Academy of Science, Shenyang, China, Aug. 23, 2016.
11. Advanced Reliability Methods, for Schlumberger, Katy, Texas, Apr. 11, 2016.
12. Test Methods for Rapid Qualification, Symposium on Solder Interconnect Reliability, Singapore, Dec. 8, 2015.
13. Advanced Reliability Methods and Supply Chain Management, Ankara, Turkey, Sept. 17–18, 2015.
14. Advancements in Qualification and Accelerated Testing, at Continental facilities, Tijera, Mexico, July 28, 2015.
15. Product Qualification and Supply Chain Responsibilities, IEEE International Conference on Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Microsystems (EuroSimE 2015), Budapest, Hungary, April 19, 2015.
16. Why the Best Companies are Monitoring the Health of their Products and Systems, Reliability Outreach Seminar & Workshop, Politecnico di Milano, Milano, Italy, Nov. 28, 2014.
17. Physics of Failure, Stratsys, MN, Sept. 4, 2014.
18. Advances in RoHS, Emerson Corporate Seminar, St Louis, Sept. 3, 2014.
19. Counterfeit Electronics, Emerson 2014 Technology Innovation and Growth Conference, June 23–25, 2014.
20. Advanced Qualification of Microelectronics, 2014 ECTC, Orlando, USA, May 27–30, 2014.
21. Product Qualification and Supply Chain Responsibilities, 3rd Micro / Nano Electronics Packaging and Assembly Forum, Grenoble, France, May 20–23, 2014.
22. Advanced Qualification of Automotive Electronics, International Seminar on Reliability Trends in ICT Combined Automotive Components, Daejeon, Korea, May 14, 2014.
23. Product Qualification and Supply Chain Responsibilities, 15th Electronics Packaging Technology Conf. (EPTC), Singapore, Dec. 11, 2013.
24. Prognostics and System Health Management, KIMM, Korea, Mar. 13, 2013.
25. Parts Selection and Supply Chain Management, Teradyne, Costa Rica, Feb. 28- Mar. 1, 2013.
26. Current Research and Industrial Applications in the Area of Advance Life Cycle Engineering, Tampere University of Technology, Finland, Dec. 11, 2012.
27. Prognostics and Health Management, Israeli Users' Association of Advanced Technologies in Hi-Tec Integrated Systems (ILTAM), Israel, July 3, 2012.
28. PHM for LEDs, Philips-Lumileds, Feb. 6–7, 2012.
29. Advanced Reliability Methods, Prognostics and System Health Monitoring, Emerson Network Systems, Aug. 17, 2011; Emerson Network Systems, Shenzu, China, Jan. 19, 2012; Emerson Network Systems, Philippines, Jan. 25, 2012.
30. Reliability and Testing Issues with FR-4 Circuit Boards, Underwriters Laboratory, Tokyo, Japan, June 29, 2011.
31. China's Electronics Industry, NSA, MD, June 17, 2011
32. Advanced Reliability Methods, Prognostics and System Health Monitoring, Capital Normal University of Beijing, China, June 7, 2011; also Harbin Institute of Technology, June 8, 2011.
33. Physics of Failure Approach for Prognostics and Health Management, University of Maryland, College Park, MD, March 23, 2011.
34. China's Electronics Industry, a short course presented by M. Pecht and L. Zuga, University of Maryland, College Park, MD, Oct. 18, 2010.
35. Prognostics for Information Systems, CALCE-CityU-PHM Society short course, Shenzhen, China, May 19-20, 2010.
36. Advanced Reliability Methods, Prognostics and System Health Monitoring, LG Electronics, Seoul, Korea, May 17–18, 2010.
37. Going beyond the U.S. Food and Drug Administration: How can China Benefit from Past Experience? CityU Centre for Prognostics and System Health Management, Hong Kong, Nov. 10, 2009.
38. Advanced Qualification Methods and Prognostics, Bosch, Detroit, MI, Sept. 24-25, 2009.
39. Prognostic and Health Management, Lenovo, Beijing, China, July 27, 2009.

40. A New Growth Strategy in Technological Transformation for China's Electronics Industry, ICRMS 2009, Chengdu, China, July 20, 2009.
41. Prognostics and Health Management for Telecom Equipment, Ericsson, Sweden, Nov. 9-12, 2008.
42. Reliability and Prognostics, Schlumberger - France, Nov. 6-9, 2008.
43. Advanced Qualification and Testing Methods, FDA Special Topics in Reliability Course, MD, Oct. 7, 2008.
44. Diagnostics and Prognostics of Medical Devices, FDA Special Topics in Reliability Course, MD, Sept. 30, 2008.
45. Counterfeit Electronics, FDA Special Topics in Reliability Course, MD, Sept. 23, 2008.
46. Lead-free Electronics, FDA Special Topics in Reliability Course, MD, Sept. 16, 2008
47. Reliability Problems that Arise in Products Having Complex Supply-Chains, FDA Special Topics in Reliability Course, MD, Sept. 9, 2008.
48. Qualification and Screening of Electronics, Schlumberger, Japan, July 23, 2008.
49. Qualification Methods, Yokohama University, Japan, July 16, 2008.
50. Reliability and Prognostics, Schlumberger, Japan, June 13, 2008.
51. Reliability and Prognostics, Schlumberger, Houston, TX, May 16, 2008.
52. Impact of EU Thermal Requirements on Telecomm Equipment, Huawei, Shenzhen, China, April 29, 2008.
53. Screening and Burn-in Methods, Huawei, Shenzhen, China, April 12, 2007.
54. Complying with Environmental Legislation, Emerson Materials and Manufacturing Forum, Coronado Springs, FL, Nov. 9, 2006.
55. Risks in RoHS Implementation, CEPREI, Guangzhou, China, July 17, 2006; CTTL, Beijing, China, July 18, 2006; CQC, Beijing, China, July 19, 2006.
56. Are you Really Ready for RoHS and WEEE? A Course on Tin Whiskers and Flame Retardants, Hong Kong, April 14, 2006.
57. Conductive Filament Formation in Electronic Circuit Cards, Astec, China, Dec. 7, 2005.
58. Conductive Filament Formation in Electronic Circuit Cards, Rosemont, Emerson, Nov. 17, 2005.
59. Assessing Reliability of Products Subject to Harsh Environment and High Temperatures, IMAPS Nordic, Tonsberg, Norway, Sept. 14, 2005.
60. Electronics Assembly Reliability Analysis and Test Technologies, ICEPT, Shenzhen, China, Aug. 30, 2005.
61. Reliability Training Course, CEPREI, Guangzhou, China, Aug. 25, 2005.
62. Lead-free Business Discussion, Arbitron, Columbia, MD, Aug. 10, 2005.
63. Reliability Training Course, Medtronic, Tempe, AZ, June 6-7, 2005.
64. Lead Free Soldering, Schlumberger, TX, May 16, 2005
65. Supply Chain Management, Hong Kong, April 22-24 and April 29-30, 2005.
66. Reliability Training Course, Emerson Network Power System, Shenzhen, China, April 18-22, 2005.
67. Reliability Training Course, ACEL, Beijing, China, Sept. 1-3, 2004.
68. Monitoring the Health (Reliability) of Products, Hong Kong University of Science and Technology (IEEE CPMT Hong Kong Chapter), Hong Kong, June 9, 2004.
69. Reliability Methods, Avansys, Shenzhen, China, Jan. 12, 2004.
70. IEEE Reliability Standards, Schlumberger, Houston, TX, Dec. 19, 2003.
71. Lead-Free Development for the Oil Industry, Halliburton, Houston, TX, Nov. 3, 2003.
72. Lead-Free IP Issues, Emerson Electronics, MO, Aug. 21, 2003.
73. IEEE Reliability Prediction Standard 1413, COTS Conf., MA, Aug 26, 2003.
74. Parts Selection and Management, Kollmorgen, MA, Aug. 25, 2003
75. Electronics Reliability, KAIST Short Course, Daichon, Korea, July 3, 2003.
76. Contacts and Connectors, Hong Kong, June 23, 2003; also Shenzhen, China, July 1, 2003.
77. Electronics Reliability, Halliburton, Houston, TX, March 6, 2003.
78. Part Selection and Management, Technobit, Spain, July 6, 2002.
79. How to Select and Use Electronic Parts Outside the Manufacturer's Specified Temperature Range (Uprating), Technobit, Spain, July 5, 2002.
80. Using Reliability Predictions for Telecom Systems Designs, IMAPS/SMTA Conf., May 16, 2002.
81. Reliability and Physics of Failure, United Defense, MN, April 16-17, 2002.
82. Reliability Training Course, City University of Hong Kong, Hong Kong, March 7, 2002.
83. Practical Reliability Engineering - Special Focus on Electronics, Huawei Electronics, Shenzhen, China, Nov. 2001.
84. Device Encapsulation Reliability Issues, Medtronic, Tempe AZ, Oct. 4, 2001.
85. Parts Selection and Management, Hamilton-Sundstrand, Hartford, CT, Sept. 13, 2001.
86. Part Selection and Management, ASCO, A Division of Emerson, Hong Kong, June 27, 2001.
87. Practical Reliability Engineering - Special Focus on Electronics, City University of Hong Kong, Hong Kong, China, June 20- 22, 2001.

88. How to Select and Use Electronic Parts Outside the Manufacturer's Specified Temperature Range (Uprating), Public Offering, European Conf.: Military and Space Electronics Conf., Brussels, Belgium, Sept. 25, 2000.
89. Introduction of Electronics in an Electro-Mechanical World -- How to Achieve Reliability in An Electronic Module, Sixth AMC Technology Conf., Battelle Memorial Institute, Columbus, OH, May 3-4, 2000.
90. How to Select and Use Electronic Parts Outside the Manufacturer's Specified Temperature Range (Uprating), Public Offering in conjunction with Commercialization of Military and Aerospace Electronics, Los Angeles, CA, Jan 30, 2000.
91. Next Generation of Electronic Parts - Processes, Tests, Applications and Risks, Hong Kong Productivity Center Seminar, Hong Kong, China, Nov. 12, 1999.
92. Parts Selection and Management, Israel, Oct 21, 1999.
93. How to Select and Use Electronic Parts Outside the Manufacturer's Specified Temperature Range (Uprating), Raytheon, Rhode Island, Aug 26, 1999.
94. How to Select and Use Electronic Parts Outside the Manufacturer's Specified Temperature Range (Uprating), Allied Signal, Tucson, AZ, Aug 25, 1999.
95. Next Generation of Electronic Parts-Processes, Tests, Applications and Risks, 1999 Military/Aerospace (Transportation) COTS Conf., Berkeley, CA, Aug 24, 1999.
96. How to Select and Use Electronic Parts Outside the Manufacturer's Specified Temperature Range (Uprating), Rockwell Collins, Cedar Rapids, Iowa, June 2, 1999.
97. How to Select and Use Electronic Parts Outside the Manufacturer's Specified Temperature Range (Uprating), General Dynamics Information Systems, Minnesota, May 11-12, 1999.
98. Advanced Plastic Encapsulated Microelectronics Course, Storage Technologies, Denver CO, Jan. 28-29, 1998.
99. Reliability Concepts and Fundamentals, short course for Microsoft, Redmond, WA, Jan. 14-15, 1999.
100. Plastic Packages - Status and Future The Reliability Challenge, Finn Jensen Reliability Consultancy and Shannon Quality Training, Dublin, Ireland, May 19, 1998.
101. Advanced Plastic Encapsulated Microelectronics Course, Haifa, Israel, Dec. 9-10, 1997.
102. Advanced Plastic Encapsulated Microelectronics Course, Scottsville, AZ, Aug. 19, 1997.
103. Printed Wiring Board Failure Mechanism Workshop, College Park, MD, Aug. 15, 1997.
104. Second Electronic Components Management and Uprating Workshop, CALCE Electronic Packaging Research Center, University of Maryland, College Park, Aug. 4-5, 1997.
105. Physics of Failure: An Approach to Reliability Design and Assessment, Tutorial: 6th Int'l Sym. on the Physical & Failure Analysis of Integrated Circuits, Singapore, July 21-25, 1997.
106. Advanced Plastic Encapsulated Microelectronics Course, Eglin Air Force Base, May 29, 1997.
107. Advanced Plastic Encapsulated Microelectronics Course, GEC-Marconi Research Center, England, March 12, 1997.
108. Plastic Encapsulated Microelectronics Course, AlliedSignal, Towson, MD, Feb. 25-26, 1997.
109. Advanced Plastic Encapsulated Microelectronics Course, Lockheed Martin Tactical Communication System, Salt Lake City, UT, Nov. 19-20, 1996.
110. Technology Overview, Javelin Millile PEM IPT, Lewisville, TX, Nov. 15, 1996.
111. Using PEM's in High Reliability Application, AlliedSignal, Kansas City, MO, Oct. 8-9, 1996.
112. Design for Reliability - a PoF Approach, for GM Saturn, Troy, MI, Sept. 25, 1996.
113. Advanced Plastic Encapsulated Microelectronics Course, Schaumburg, IL, Aug. 20, 1996.
114. Component Screening, The Int'l Workshop on Failure Rate Modeling for Reliability Prediction, Zurich, Switzerland, June 21, 1996.
115. Hybrid Microcircuit and Multichip Module Packaging Technologies, UCLA short course, Los Angeles, CA, May 8-10, 1996.
116. Plastic Encapsulated Microelectronics Course, M/A-COM, MA, April 11-12, 1996.
117. Plastic Encapsulated Microelectronics, Materials, Processes, Tests, Reliability and Applications, College Park, MD, March 19-20, 1996; Sept. 12-13, 1995; May 24-25, 1995; and March 15-16, 1995.
118. Physics of Failure, Army Research Laboratory, Fort Monmouth, NJ, Feb. 20, 1996.
119. Physics of Failure, Hobbs Engineering, Inc., Orlando, FL, Feb. 2, 1996; Santa Clara, CA, Sept. 25, 1995; Boston, MA, June 13, 1995 and Denver, CO, March 13, 1995.
120. Plastic Encapsulated Microelectronics Course, Hazeltine Corp., NY, Oct. 16, 1995.
121. The Physics-of-Failure Approach to Reliability Assessment, 1995 IEEE Multi-Chip Module Conf., Santa Cruz, CA, Jan. 31, 1995.
122. Ball Grid Array Versus Fine Pitch: Comparing Device to Card Assembly Issues Strengths and Weaknesses, Fifth Annual Electronics Packaging Sym., Binghamton, NY, July 18-19, 1994.
123. Multichip Hybrid Packaging for High Data Rates, Continuing Engineering Education Program, George Washington University, Washington, DC, July 11-13, 1994.

124. The Influence of Temperature on Integrated Circuit Failure Mechanisms, I-Therm '94 Pre-Conf. Course, Washington, DC, May 4, 1994.
125. Reliability Modeling and Improvement, a course for the European telecommunications industry, Harlow, United Kingdom, March 16-17, 1994.
126. Perspective on Physics-of-Failure Approach to Reliability, a course for the European avionics industry, Hampshire, United Kingdom, March 17, 1994.
127. A Physics-of-Failure Approach to Reliability Assessment, Northern Telecom, Ottawa, Canada, Feb. 21, 1994.
128. Electronic Packaging in Japan, Japanese Technology Evaluation Center Workshop, Arlington, VA, Jan. 12, 1994.
129. High Density Microcircuit Packaging, University of Maryland Center for Continuing Education, Baltimore, MD, Nov. 15-17, 1993.
130. MCM-L Reliability Issues, IPC Workshop, Washington, DC, Oct. 24, 1993.
131. Electronic Packaging, United Nations: UNIDO Program, Madras, India, Aug. 3-5, 1993.
132. Reliability of Cost Effective Multi-chip Modules, Industrial Technology Research Institute, Taiwan, July 8, 1993.
133. Reliability Issues in Microelectronic and PWB Packages, ASME Program No. 102-12-9309, PD-242, Santa Clara, CA, June 21-22, 1993; also ASME Program No. 91786, Course No. 242, Fort Worth, TX, April 16-17, 1991; also ASME Program No. 90756, Course No. 242, San Jose, CA, June 26-27, 1990; also at the Industrial Technology Research Institute (ITRI), Taiwan, May 24-25, 1990.
134. Procuring and Using Plastic Encapsulated ICs Best Commercial Practice Microcircuits in High Reliability Applications, College Park, MD, June 16-18, 1993.
135. Cost Effective Design and Assessment Issues for Modern Electronic Packages, half day course, Quality Assurance Conf., Israel, Nov. 16, 1992.
136. Int'l Course on Reliability Issues in Electronic and Engineering Industries, Jakarta, Indonesia, Aug. 4-5, 1992.
137. Reliability: The Key to Product Success, 1 of 6 Presenters, NTU Advanced Technology and Management Program, College Park, MD, June 18-19, 1992.
138. Total Product Assurance, M. Pecht and D. Raheja, NTU Advanced Technology and Management Program, Course No. MC91100A1, College Park, MD, Oct. 1-2, 1991.
139. The Physics of Failure Approach to Reliability, Third Annual SAE Int'l Reliability, Maintainability and Supportability Workshop, Dallas TX, May 6-8, 1991.
140. Introduction to AVIP, Full day course for the Air Force, MITRE and Rockwell, Dallas, TX, April 23, 1991.
141. Introduction to Reliability and Safety Engineering, Hardware and Software, University of Maryland Center for Professional Development, College Park, MD, Apr. 911, 1990.
142. Reliable Design of Electronic Devices, CALCE and SRC sponsored course, College Park, MD, Nov. 1416, 1989.
143. RAMCAE/CALS: Integrating R & M into the Design Process, U.S. Army Management Engineering College Defense Management Course, Topic: Tools for Integrating R&M with CAE, Rock Island Army Arsenal, IL, Feb. 2224 1989.
144. A Mechanical Engineering Approach to Electronics Design, ASME Course No. 172905, Orlando, FL, Oct. 2527, 1989; also ASME and University of Maryland cosponsored short course, Oct. 2527, 1988.
145. Reliability Engineering, Management and Maintainability, Center for Professional Development Program, University of Maryland, July 1014, 1989; also Oct. 1114, 1988; also May 2631, 1988.
146. Design For Reliability and Maintainability, LockheedGeorgia Company, Marietta, GA, Aug. 18, 1987.
147. The Design and Analysis of Reliable Printed Wiring Boards: A Mechanical Engineering Viewpoint, Sponsored by the Engineering Research Center of the University of Maryland, June 1618, 1986.
148. Reliability Engineering Workshop, Sponsored by Center of Reliability Engineering, College Park, MD, March 11, March 31 and April 14, 1986.
149. Applications of Expert Systems in Computer Aided Design, Computer Science, University of Maryland, College Park, MD, Nov. 13, 1984.

TEACHING AND ADVISING

Courses taught:

ENME 101	Computer Engineering: F86
ENME 300	Material Science: F83,
ENME 321	Heat Transfer: F88, S93
ENME 360	Vibrations: S84
ENME 404	Engr. Design: F83
ENME 480	Engr. Experimentation: F83, S84, F84, S85, F85, S86, F86, F87, S88, F88, S89, F89, S90, F90, S91, S92, F92, F94, S95
ENME 489	Special Projects: S84, SU84, F84, S85, SU85, F85
ENME 489/808	Product Reliability - Concepts, Processes, Tests, and Applications: S86, S88, S89, S90, S96, F97, S00, S02, S03, S05, S07, S08
ENME 601	Microprocessors: S85, F85, S87
ENME 612	Advanced Electronics Packaging: F91, S93, S94,
ENME 690	Mechanical Fundamentals of Electronic Systems: F02, F03, F05
ENME 695	Design for Reliability: S03, S06, S07, S09, S10, S11, S12, S13, S14, S15, S17, S18
ENME 737	Prognostic & Health Management: F06, F07, F09, F10, F11, F12, F13, F14, F16, F17
ENME 808A	Batteries- Operation, Modeling, and Reliability: F18
ENME 808X	Extreme Temperature Electronics: F92, F96
ENME 808X	Plastic Encapsulated Microelectronics: S95, S97, F98, F02
ENME 808X	Materials in Electronics: F99

Advising: Other than Research

1. Established co-op program at the University for local UMD high school students to gain direct experience in engineering disciplines involved in the electro-technology industry. Generally, 2 to 4 high school students participate during the summer.
2. From 1993-1996, advised undergraduate scholars in cooperation with the University of Maryland Research Experiences for Undergraduates office and the office of Graduate Minority Affairs. Students come from Lehigh, Cornell, South Carolina State University, the University of Maryland, and other schools, and represent electrical, chemical, mechanical, and industrial engineering disciplines. The eight-week program included an educational introduction to electronic packaging and individual research projects, with hands-on experience in experimental and analytical techniques. Since 1996, this has been expanded to include foreign visitors as well.
3. Advisor: Int'l Society of Hybrid Microelectronic (1989-1999)
4. Advisor: Pi Tau Sigma: (1988)

Other work

Reviewer: Division of Research VPR: **W.M. Keck Foundation Research Program Proposals: June 2018**

Thesis Committees

Served on the PhD Dissertation Examination Committee for Ms. Areen Abdallah Allataifeh, United Arab Emirates University, Feb. 2019.

Served as reviewer for concept papers on behalf of Division of Research at WM Keck Foundation competition, June 2018

Served on George K. Winstead (Co-Advisor along with Dr. David C. Jenn) in MS Thesis, Naval Postgraduate School, Monterey, California, USA, Sep. 2017.

Served as external examiner for Ph.D student, Mohamed Halick Mohamed Sathik of Nanyang Technological University (NTU), Singapore in Jun 2017

Opponent of Veli Lumme on thesis committee, Tampere University of Technology, Finland, Dec. 2012.

Served on Prof. Lauri Sydanheimo's student thesis committee, Dept. of Electronics, Tampere University of Technology, Finland, Nov. 2010.

Served on Mr. Chandradip Patel qualifying exam committee, Oct 2010.

Served on Suzanne Zhang (co-advisor at Beihang University, China), Sep. 2010.

Served on 48 MS thesis and 18 Ph.D. dissertation advisory committees in the Mechanical Engineering Department

Served on 13 UMD Ph.D. dissertation advisory committees outside of Mechanical Engineering

Served on Ph.D. thesis committees at Johns Hopkins University and Polytechnic University in Hong Kong