

# IEEE Distinguished Lecturer Seminar

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Politecnico di Milano, Milano, Italy

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## ADVANCES IN PRODUCT QUALIFICATION AND SUPPLY CHAIN RESPONSIBILITIES

Today, products are changing very rapidly, customers have more choices, tremendous price pressure exists on suppliers, and there is pressure to test quickly. However, the traditional test and qualification standards are not working. Over the past 10 years, there have been an increasingly large number of products that have passed qualification tests but have failed in the field. The resulting costs of these failures have been in the hundreds of millions of dollars for many companies.

This lecture will overview why the current methods are inadequate, why the standards need to be replaced and how companies can qualify products in an accelerated manner to ensure acceptable reliability. Virtual qualification, accelerated testing, target application requirements, failure mechanisms and models, and prognostics-based qualification will be discussed, with various examples. Responsibilities with the supply chain will also be presented.

**Prof Michael Pecht** is a world renowned expert in reliability and risk assessment. Prof Pecht has a BS in Physics, an MS in Electrical Engineering and an MS and PhD in Engineering Mechanics from the University of Wisconsin at Madison. He is a Professional Engineer, an IEEE Fellow, an ASME Fellow, an SAE Fellow and an IMAPS Fellow. He is the editor-in-chief of IEEE Access, and served as chief editor of the IEEE Transactions on Reliability for nine years, and chief editor for Microelectronics Reliability for sixteen years. He has also served on three U.S. National Academy of Science studies, two US Congressional investigations in automotive safety, and as an expert to the U.S. Food and Drug Administration (FDA). He is the founder and Director of CALCE (Center for Advanced Life Cycle Engineering) at the University of Maryland, which is funded by over 150 of the world's leading electronics companies at more than US\$6M/year. The CALCE Center received the NSF Innovation Award in 2009 and the National Defense Industries Association Award. He is currently a Chair Professor in Mechanical Engineering and a Professor in Applied Mathematics, Statistics and Scientific Computation at the University of Maryland. He has written more than twenty books on product reliability, development, use and supply chain management. He has also written a series of books of the electronics industry in China, Korea, Japan and India. He has written over 700 technical articles and has 8 patents. He consults for 22 international companies. In 2015 he was awarded the IEEE Components, Packaging, and Manufacturing Award for visionary leadership in the development of physics-of-failure-based and prognostics-based approaches to electronic packaging reliability. He was also awarded the Chinese Academy of Sciences President's International Fellowship. In 2013, he was awarded the University of Wisconsin-Madison's College of Engineering Distinguished Achievement Award. In 2011, he received the University of Maryland's Innovation Award for his new concepts in risk management. In 2010, he received the IEEE Exceptional Technical Achievement Award for his innovations in the area of prognostics and systems health management. In 2008, he was awarded the highest reliability honor, the IEEE Reliability Society's Lifetime Achievement Award. He has previously received the European Micro and Nano-Reliability Award for outstanding contributions to reliability research, 3M Research Award for electronics reliability analysis, and the IMAPS William D. Ashman Memorial Achievement Award for his contributions in reliability assessment methods for electronics products and systems.

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