**John Kowalchik**
Vice President of Mission Success
Lockheed Martin

John Kowalchik is the vice president, Mission Success for Lockheed Martin Space Systems Company, a major business area of Lockheed Martin Corporation providing military, civil and commercial spacecraft, strategic and tactical missiles, and associated command and control systems. In this role, he and his organization perform independent, technical risk assessment of all company products prior to their delivery to ensure that they will meet customer requirements for performance and operational life. His approval is required in order for programs to receive launch authorization from Lockheed Martin.

Kowalchik has a long heritage of electronics design spanning the aerospace, commercial and consumer markets. He began his career in the early days of microprocessors, introducing them into custom, automatic test equipment for power semiconductors and other products. He led design organizations producing avionics products for a variety of satellite applications for NASA, NOAA, commercial and military vehicles, specializing in fault tolerant, high reliability designs for space flight applications. In his prior position, Kowalchik was the vice president and chief engineer for Space Systems Company, providing technical oversight and problem resolution across the business.

Kowalchik is a strong supporter of diversity and inclusion activities and STEM education. He chairs the Space Systems Company Diversity Council and is the executive sponsor for the Space Systems Company Engineering Explorer Post 411, chartered within the Silicon Valley Monterey Bay Council, BSA – the only Post dedicated to Engineering as a profession. Kowalchik is a 38-year veteran of Lockheed Martin and holds a BSEE from Wilkes University, Wilkes-Barre, Pa.

**Eric Chason, Ph.D.**
**Professor of Engineering**
**Brown**

Eric Chason is a Ph.D. and professor in the division of engineering at Brown University. His major research interests are in the evolution of morphology and stress in thin films. He later received his doctor of philosophy degree in physics from Harvard University and he joined as a technical staff member at Sandia National Labs in Albuquerque before joining the Brown University faculty.

Dr. Chason studied in Japan for his post-doctoral research and his prior work experience focused on the evolution of surfaces and thin films during materials. His broad research led to the development of several in situ thin film diagnostics enabling the monitoring of thin film stress, surface morphology, microstructure and interfacial reactions during film growth and ion bombardment, and the development of a multi-beam optical technique for monitoring stress evolution in situ during processing. In recent years, his notable research projects have included residual stress in polycrystalline films, whisker formation in Sn films, stress induced in lithium-ion batteries and ion-induced surface nano-patterning.

**Thomas J. Hester**
Senior Principal Multi-Disciplined Engineer, Component Engineering, Mechanical & Optical Engineering Center, Space and Airborne Systems
Raytheon Company

Tom Hester is a component engineer working at Raytheon Space and Airborne Systems, in El Segundo, Calif. He led the Raytheon committee that performed an extensive study of tin whisker self mitigation using leaded solder to attach pure tin surface mount components to printed wiring boards. He has supported the development of the Raytheon Prohibited Materials screening process for the past several years. Previous work experiences include: DirecTV, Haas Automation, Beckman Instruments, and Rockwell International.

Hester holds a bachelor's degree in chemical engineering from California State University, Long Beach and has completed course work on a master's degree in computer science at California State University, Fullerton.

**Pierre Eckold, M.Sc.**
Robert BOSCH GmbH

Pierre Eckold holds a Master of Science degree from the University of Leipzig, Germany, focusing on inorganic chemistry and crystal engineering. Currently, he is working on his doctoral thesis in a cooperative project between Robert Bosch GmbH and the Institute of Inorganic Chemistry of the University of Stuttgart. His research concentrates on the chemical background of the corrosion of tin and its influence on whisker growth. By utilizing X-ray diffraction, Raman spectroscopy and other solid-state chemistry related analysis techniques, Eckold investigates the impact of tin plating parameters on the corrosion properties of the resulting metal finish.

**Wei-Hsun Chen**
Ph.D. Candidate
Purdue University

Wei-Hsun Chen holds a bachelor of science and a master of science degree in physics from National Taiwan University. Chen is currently pursuing his doctor of philosophy degree in materials engineering at Purdue University. His current research encompasses stress analysis on tin whisker formation in SAC305 solder and Pb-free electroplated Sn films, with an emphasis on characterization of thin film microstructure and crystallography, including the assessment of whisker growth risk via accelerated testing. Chen currently develops finite element modeling to determine mechanical responses of thin films with a range of crystallographic textures in ambient and thermal cycling conditions.

**Christopher Stuttle**
*Ph.D. Candidate, Dept. of Materials*
*Loughborough University*

Christopher Stuttle is a Ph.D. student from the Department of Materials at Loughborough University studying tin whisker growth and tin electrodeposition from aqueous and novel deep eutectic solvents. His academic background includes an undergraduate master's degree in physics from Southampton University and a postgraduate degree in nanoscience from the Department of Physics at Loughborough University. In addition, his previous experience in whisker study involved work with bismuth whisker growth from magnetron sputtered thin films.

**Ying Wang**
*Research Assistant*
*Purdue University*

**Dave Hillman**
*Principal Materials and Process Engineer*
*Rockwell Collins*

David Hillman is a principal materials and process engineer in the Advanced Operations Engineering Department at Rockwell Collins Inc.
His previous experience includes serving as a subject matter expert for the Lead-Free Manhattan Project and in 2011. In 2008 Hillman was recognized at the SMTA, by receiving the Member of Technical Distinction Award for his significant and continuing contribution to the association. Hillman was notably awarded the Da Vinci Medal as a Rockwell Engineer and currently serves as the chairman of the IPC J-STD-002 Solderability Committee.
Prior to joining Rockwell, Hillman worked as a metallurgical engineer at the Convair Division of General Dynamics with responsibility in material testing and failure analysis. As a member of the Surface Mount Technology Association Journal, he serves on the Soldering and Surface Mount Technology Journal Technical Paper Review Committees. He additionally serves as a member of IPC, the American Society for Metals (ASM), the Minerals, Metals & Materials Society (TMS), and the Surface Mount Technology Association (SMTA).

Hillman graduated from Iowa State University and holds a Bachelor of Science degree and Master of Science degree in material science and engineering.

**Junghyung Cho, Ph.D.**
Professor of Mechanical Engineering
Binghamton University

Dr. Junghyun Cho is a Professor of the Department of Mechanical Engineering and a Co-Director of the Materials Science and Engineering Program at the State University of New York (SUNY) at Binghamton.

He joined the University as an Assistant Professor in Fall 2001 after finishing a postdoctoral researcher appointment at the University of California, Santa Barbara (UCSB) (1999-2001). He received his Ph.D. in Materials Science and Engineering from Lehigh University in 1998, M.S. in Materials Science and Engineering from Northwestern University in 1993, and B.S. in Metallurgical Engineering from Yonsei University (Seoul, Korea) in 1991. Before starting his graduate studies, Dr. Cho worked at Samsung Electronics – Semiconductor R&D Center (Kihung, Korea) in the area of electronics packaging materials and processes (1990-91). He has also been a visiting Professor in the Department of Metallurgy and Ceramics Science at Tokyo Institute of Technology, JAPAN (2009-2010).

Dr. Cho's research interests include thin films and coatings, processing science, microstructure design and mechanical behavior of ceramics and metals, and characterization of various types of materials. His research has been supported from federal and state government agencies, as well as industrial sectors and consortiums.

**Stephan Meschter, Ph.D.**
Mechanical Engineer
BAE Systems Electronic Solutions

Stephan Meschter, Ph.D., has 25 years' experience in advanced electronic packaging, electronics assembly mechanical failure analysis, and reliability testing of electronic assemblies at BAE Systems Electronic Systems in Endicott, NY and its heritage companies (General Electric, Martin Marietta and Lockheed Martin). He has designed and evaluated electronic assemblies for power, flight and jet engine control systems used in spacecraft, aircraft and ground vehicles. Dr. Meschter was a member of the 2009 U.S. DoD Lead-free Manhattan Project team tasked with the risk assessment of lead-free electronics in high reliability, harsh environment electronics in DoD applications. Dr. Meschter was the Aerospace Industries Association Pb-free electronics risk management (AIA-PERM) Consortium vice chairman and is currently supporting revision of several GEIA-STD-0005 lead-free aerospace and defense risk management documents. Dr. Meschter is currently the principle investigator on two U.S. DoD strategic environmental research and development projects (SERDP) that are examining corrosion induced whisker growth, conformal coatings for whisker mitigation and Monte Carlo whisker short circuit modeling.

**Michael Osterman, Ph.D.**
Director of CALCE
University of Maryland

Michael Osterman, Ph.D., is a senior research scientist and the director of the CALCE Electronic Products and System Consortium at the University of Maryland. He heads the development of simulation assisted reliability assessment software for CALCE and simulation approaches for estimating time to failure of electronic hardware under test and field conditions. Dr. Osterman served as a subject matter expert on phase I and II of the Lead-free Manhattan Project sponsored by Office of Naval Research in conjunction with the Joint Defense Manufacturing Technical Panel (JDMTP).
He has consulted with several companies in the transition to lead-free materials. He has lead CALCE in the study of tin whiskers since 2002 and has authored several articles related to the tin whisker phenomenon. He has written eight book chapters and more than 70 articles, including the Best Session Paper Award in 41st International Symposium on Microelectronics, IMAPS 2008 and the Best Paper-Maurice Simpson Technical Editors Award in the Institute of Environmental Sciences, 2008. In 2008, Dr. Osterman set up an electroplating facility for conducting tin whisker research, a vibration test facility and initiated a pilot study on influence of charging cycle on life of rechargeable single cell and multiple cell battery packages. He has conducted multiple experiments on temperature cycling, vibration, and mechanical bend of electronic assemblies. He is a member of ASME, IEEE, IMAPS and SMTA.

**Linda Woody**
Engineering Manager
Lockheed Martin

Linda Woody has worked in the electronics industry for 35 years and received a patent for her work in laser soldering. As a member of Lockheed Martin's Production Technical Excellence team, Woody is responsible for new processes, process equipment development and failure analysis. She is the current chair of the Lead-Free Electronics Risk Management Consortium, also known as PERM. She has been involved in lead-free issues in the industry and is a member of the Lead Free Manhattan Project team that developed and published a book on lead-free best practices, a technology roadmap and research gaps analysis. Woody has supported IPC

standardization committees for more than 15 years and recently received the IPC President's Award in 2013.

**David Pinsky**
Engineering Fellow
Raytheon

David Pinsky is an engineering fellow at Raytheon Company, with more than thirty years of experience in engineering. Pinksy is responsible for the enterprise-wide and business unit specific tin control policies and procedures within Raytheon and Integrated Defense Systems. A developer of Raytheon policy and standard practices for tin whisker risk mitigation, he chairs the Raytheon tin whisker core team. He is part of the Restriction of Hazardous Substances (RoHS) Technical Steering Committee, and has been chosen as the engineering lead for the Raytheon REACH Implementation Project. He has published an application-specific tin whisker risk assessment algorithm tool which has been widely used in the aerospace and defense industry. A recognized expert in the area of tin whisker risk management, Pinsky was selected as an industry expert to participate in the Department of Defense Lead-Free Manhattan Project. His work experience includes multiple publications and presentations in the area of tin whisker risk management and he serves as a member of the Lead-Free Electronics Risk Management (PERM) working group.