CMSE 2017

Program Book

21st Annual

Components for Military & Space Electronics Conference & Exhibition

April 11-13th, 2017

Four Points by Sheraton (LAX)
Los Angeles, California

CMSE

Organized by: TJ Green Associates LLC

Welcome to CMSE 2017

Dear Military and Space Electronics Professionals,

On behalf of the Program Committee I would like to personally welcome everyone to this year's 21s[t] annual CMSE Conference and Exhibition. This is in interactive event that requires full participation from the attendees as well as the speakers and exhibitors. The idea is to promote broad discussion about grass root technical issues we all face together in this industry. So please take the time to listen, ask good questions and don't hesitate to respectfully challenge each other's ideas and technical opinions.

I'd like to personally thank our sponsors and exhibitors for supporting CMSE. On a programming note an electronic copy of all the presentations will be sent via a secure link to all attendees after completion of CMSE 2017.

I look forward to speaking to each and everyone, welcome!

Tom Green

Program Chairman

Program Committee

Tom Green
TJ Green Associates LLC
Program Chair

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Raytheon

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AVX Corp.

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Electronic Materials Consultant

Mike McKeown
Hesse Mechatronics

Mike Sampson
NASA

Jeff Sokol
The Aerospace Corp.

Tom Terlizzi
TJ Green Associates LLC

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Keynote Speakers

Michael J. Sampson received his MSc in Engineering Management from the University of Maryland, University College, in 1999. He has been co-Manager of the NASA Electronic Parts and Packaging (NEPP) Program since October 1, 2003 and GSFC Alert Coordinator since 2005. The NEPP program is a cross- agency activity that evaluates new and emerging EEE part technologies, shares information and develops tools for EEE parts assurance. Mike has worked for NASA for over 20 years. Before joining NASA, Mike spent five years as a NASA support contractor and before that, more than twenty years as an engineer and engineering manager in electronic parts manufacturing.

David Davis is currently the SMC Chief Systems Engineer at the Space and Missile Systems Center, Air Force Space Command, Los Angeles Air Force Base, CA. He has also served as the Acting Engineering Director. Mr Davis is in his 39th year at SMC where he spent the first ten years supporting the Global Positioning System (GPS) Program and Defense Meteorological Satellite Program (DMSP) working primarily satellite hardware design, manufacturing, quality and test. In his role, he supports the Commander and the Director of Engineering for center wide application of systems engineering, parts, materials and processes, radiation hardening, specifications and standards, industrial base, manufacturing/quality engineering, and space flight worthiness assessment.

2017 Event Schedule

TUESDAY

	TRAINING SEMINARS	
0700 - 0800	BREAKFAST AND REGISTRATION	
0800 - 1200	Session A **Hermeticity Testing, RGA and the New TM 1014 Spec Limits**	Thomas J Green *TJ Green Associates LLC* Robert Lowry *Electronic Materials Consultant*
	Session B **Multi Layer Ceramic Capacitor Technology…Materials, Processes and Reliability**	John Marshall *AVX Corp*
1300 - 1700	Session A **Non-Hermetic Packaging for Hi-Rel Military and Aerospace**	Thomas J Green *TJ Green Associates LLC* Robert Lowry *Electronic Materials Consultant*
	Session B **Microelectronic Package & Board Failure Mechanisms and Related Analysis Techniques**	Steve Greathouse *Plexus Corporation*

WEDNESDAY

	EXHIBITOR HOURS: 1100 - 1900	
0800 - 0815	**Welcome/Intro**	
0815 - 0845	Keynote **Echoes Of The Past, Glimpses Of The Future… Ongoing Trends In Assurance Of EEE Parts For Spaceflight**	Michael J. Sampson *NASA Goddard Space Flight Center*
	Session 1 - Hermetic Vs Non-Hermetic Packaging…..Is Our Fate Sealed?	
0845 - 0910	**1.1 Hermetic and Non-Hermetic QML ICs – Current Status and Challenges**	Shri Agarawl *NASA JPL*
0910 - 0935	**1.2 COTS & COTS + Tantalum Capacitor Failures Confirm Systemic Moisture Sensitivity Issues**	Aaron Dermarderosian *Raytheon Space And Airborne Systems*
0935 - 1000	**1.3 The New Tighter Hermeticity Test Leak Requirements – European Overview**	Gonzalo Fernández Romero *Alter Technology*
1000 - 1015	COFFEE BREAK	
1015 - 1040	**1.4 Hermetic Weld Schedule Optimization Based Tighter TM 1014 Leak Rate Specifications**	Rich Richardson *Microcircuit Labs LLC*
1040 - 1105	**1.5 Meeting the New Tighter Hermeticity Requirements with Optical Leak Testing (OLT)**	Tom Trafford *NORCOM*
1105 - 1130	**1.6 Gross Leak Standards Development**	Kathy Laird *NASA/MSFC*
1130 - 1200	**1.7 Hermetic/Non-Hermetic Panel Discussion**	Tom Green, Moderator *TJ Green Associates LLC*
1200 - 1400	LUNCH - IN EXHIBITS AREA	
	Session 2 - Passive Components and Packaging Methods for Hi Rel/Space Applications	
1400 - 1425	**2.1 Degradation and ESR Failures in MnO2 Chip Tantalum Capacitors**	Alexander Teverovsky *ASRC Federal Space and Defense*
1425 - 1450	**2.2 Tantalum Polymer Capacitors: COTS plus Solutions for Space Applications**	Chris Reynolds *AVX*
1450 - 1515	**2.3 Polymer Tantalum Capacitors Under Vacuum**	Michael Cozzolino *Raytheon Systems*
1515 - 1540	**2.4 Advanced Polymer Capacitors**	Chuck Pothier *Vishay*
1540 - 1600	COFFEE BREAK	
1600 - 1625	**2.5 Hermetic Tantalum Caps for High Power Pulse Applications**	Charlie Dewey *Evans Capacitor Company*
1625 - 1650	**2.6 Base Metal Ceramic Capacitors for High Reliability Applications**	John Marshall *AVX*
1650 - 1715	**2.7 A Low Profile High Power Inductor for High Reliability Applications**	David Olson *Vishay*
1715 - 1740	**2.8 Polymer Tantalum Capacitors for Use in Mission Critical Applications**	Ed Jones *KEMET Electronics Corporation*
1745 - 2000	WELCOME RECEPTION BUFFET	

2017 Event Schedule

THURSDAY

EXHIBITOR HOURS: 1000 - 1400			
0800 - 0830	**Keynote** **Challenges for Future Space Systems Acquisitions**	**Dave Davis** *USAF SMC*	
Session 3 - Copper Wire Bonding for High Reliability Applications			
0830 - 0855	**3.1 Introduction of High Reliability Copper Bonding Wire for High Rel Industrial, A&D Automotive Applications**	**William (Bud) Crockett, Jr.** *Tanaka Denshi Group Saga*	
0855 - 0920	**3.2 A Review on Copper Wirebond Technology in PEMs**	**Dr. Mukul Saran, QRE** *Texas Instruments*	
0920 - 0945	**3.3 Assessment of Copper Bond Wire for Use in Long Term Military Applications**	**Aaron Lecomte** *Raytheon Integrated Defense Systems*	
0945 - 1010	**3.4 Decapsulation of Copper Wire Bonded Devices**	**Subramani Manoharan** *CALCE*	**Patrick Cluskey** *University of Maryland*
1010 - 1030	**COFFEE BREAK**		
1030 - 1055	**3.5 CU Bond Wire Reliability & Decapsulation Process**	**S. Ali Lilani** *Integra Technologies LLC*	**Gary Downing** *Analytical Solutions*
1050 - 1115	**3.6 Flexible Copper Welded Interconnects for Crosstalk Reduction in WBG Power Modules**	**Dr. Doug Hopkins and Adam Morgan** *NC State*	**Mike McKeown** *Hesse-Mechatronics*
1115 - 1140	**3.7 High Performance Packaging for Space**	**Arne K. Knudsen** *Kyocera America Inc.*	
1140 - 1205	**3.8 High Reliability Rad Hard e-Mode Gallium Nitride HEMT GaN Power Technologies & Packaging for Space**	**Jim Larrauri** *Freebird Semiconductor*	
1205 - 1330	**LUNCH - IN EXHIBITS AREA**		
Session 4 - COTS: SUCCESS STORIES AND CHALLENGES			
1330 - 1355	**4.1 Understanding PCB Design & Material Warpage Challenges which Occur during B2B Board-to-Board/Module-Carrier Attachment**	**Eric Moen** *Akrometrix*	
1355 - 1420	**4.2 3D Digital Stitching in the Electronics World and Its Use with Dendritic Growth Studies**	**Steve Greathouse** *Plexus Corporation*	
1420 - 1445	**4.3 HALT Testing for Use of COTS Parts on NASA Missions**	**Anupam Choubey** *NASA JPL*	
1445 - 1510	**4.4 Deployed Forensic Cloud-Based Track and Trace Platform for Microcircuits**	**Bob MacDowell** *Applied DNA Sciences*	
1510 - 1530	**BREAK**		
Session 5 - OBSOLETE COMPONENTS and COUNTERFEIT PARTS			
1530 - 1555	**5.1 A Counterfeit Component Case History**	**Bob Lowry** *Electronic Materials Consultant*	
1555 - 1620	**5.2 Integrated Circuit Redesign Obsolescence: Assembly Options and Solutions**	**Tim Flaherty** *Golden Altos*	
1620 - 1645	**5.3 Implications of COTS Packaging Modifications in Legacy Systems**	**Aaron DerMarderosian** *Raytheon Space and Airborne Systems*	
1645 - 1710	**5.4 Risks with Obsolete Military Marked Components from the Open Market**	**Leon Hamiter** *Components Technology Institute Inc*	

2017 Exhibitors

AEM, Inc.

Akrometrix, LLC

Applied DNA Sciences

AVX Corporation

Eastern Applied Reasearch

Evans Capacitor Company

Freebird Semiconductor

Frequency Management Int.

FRT America

Golden Altos Corp

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