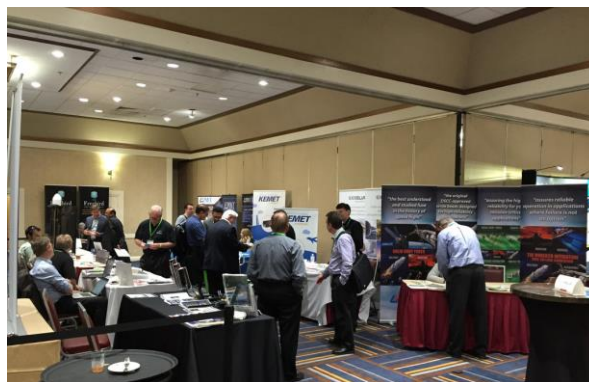


## ***Components For Military & Space Electronics Explores IC Packaging, Passives And More***

The [23rd Annual Components for Military & Space Electronics](#) (CMSE) is the premier event focused on the design, reliability, and application of electronic components for use in avionics aerospace, military and commercial space systems. This year's conference and exhibition will be held April 16-18 in Los Angeles at the Four Points Hotel at LAX. How2Power.com is a sponsor of this event.

This year's program features the recently announced keynote talks by Dennis Zogbi, a noted expert on the global market for passive electronic components and related raw materials; and Jonathan Ahlbin, a leader within the U.S. Missile Defense Agency where he is responsible for implementing and managing the team that oversees all MDA BMDS parts, materials, and process requirements and policies.

The CMSE conference provides access to more than 30 technical presentations by industry leaders, focused on advanced packaging of ICs, passive components, and a number of other topics critical to components used in high-reliability military and aerospace systems. Also included are over 30 exhibitors of passives, semiconductors and equipment manufacturers. The cutting-edge tutorials, along with two days of exhibition and technical presentations, educate, inform, and provide solutions for current challenges within the military and space electronics business.



*A scene from last year's exhibit at CMSE.*

Among the many presentations that may be relevant to those in the power electronics field, note "Power Enhancement Mode GaN HEMT update" by Jim Larrauri, Freebird Semiconductor and "Space Qualification of GaN HEMTs -Guidance Document Announcement" by John Scarpulla, The Aerospace Corporation. Also note these passives-related talks: "Base Metal Ceramic Capacitor Developments on X7R Products for Space and High Reliability Applications" by John Marshall, AVX; "MLCC and Tantalum Electrolytic Capacitor Interchangeability in High Capacitance Applications" by Chris Reynolds, AVX; and "Integrated Power Management with Ferromagnetic Thin-Film Power Inductors" by Noah Sturcken, Ferric. See the full program for other relevant presentations.

### ***Keynotes Address MLCC Shortages And Speeding Development Of Military Systems***

This year's distinguished keynote speakers are expected to deliver talks that are highly compelling and informative. Called a "National Treasure" by the former undersecretary of defense, Dennis Zogbi is the founder and lead researcher at Paumanok Publications and the author of more than 300 studies on the global market for passive electronic components and related raw materials. Zogbi advises many of the largest hedge funds in the world in the area of mass produced and specialty electronic components and speaks on Wall Street on a monthly basis. Zogbi will be speaking on "MLCC Shortages: FY 2019 Tier-To-Tier Replacement Strategies and Alternative Reference Design Solutions".

Jonathan Ahlbin is the division chief for Parts, Materials, and Processes Engineering (Acting) and the branch lead for EEE Parts Engineering with the U.S. Missile Defense Agency. In these roles, he is responsible for implementing and managing the team that oversees all MDA BMDS parts, materials, and process requirements and policies. Ahlbin will be speaking about "Flexibility and Innovation in Military Systems".

### ***Passive Component Reliability Workshop***

Among the tutorial highlights is a day-long session on the reliability of passive components (capacitors, resistors, and inductors) taught by five of the leading experts in the field: Yuri Freeman, Kemet; John Marshall and Chris Reynolds, both of AVX; Scott Harris, Vanguard Electronics; and Bryan Yarborough, Vishay Dale Electronics.

This workshop course will be presented in three sessions covering capacitors, inductors and resistors. Tantalum & Electrolytic Capacitors (Yuri Freeman), MLCC & EMI filters (John Marshall) and SuperCapacitors, Film & Thin film capacitors (Chris Reynolds).

Students will gain an understanding of capacitor construction and how performance characteristics are affected by time, temperature, voltage and frequency. End applications will be discussed along with reliability



*Tom Green, TJ Green LLC host kicks off last year's CMSE keynote by Professor Rao R. Tummala of Georgia Tech on "Packaging and Heterogeneous Integration During and Post Moore's Law Era".*

expectations, common failure modes and de-rating methods for increased lifetime performance. Processing guidelines will be presented and the availability and use of simulation models shown.

The inductor performance, reliability and selection session will be taught by Scott Harris. This course will outline the basics of magnetics from an RF and power inductor and transformers point of view. Material performance, core types and properties along with wire types, winding techniques and patterns will be shown relative to their impact on performance. Reliability predictions and levels will be discussed along with a preview of emerging technologies and device simulation techniques.

Resistor theory, performance and reliability will be taught by Bryan Yarborough. Resistor types and materials will be discussed relative to component performance. Device characteristics and performance relative to time, temperature, frequency and power will be discussed. Heat transfer means and noise characteristics will be outlined. Reliability expectations and recommended applications will be given.

For a complete rundown of all of this year's sessions at CMSE, see the [advanced program](#). For a list of companies exhibiting at CMSE, see the exhibitors [page](#). For more on the keynote speeches, see the [abstract](#) for Dennis Zogbi's talk and the [abstract](#) for Jonathan Ahlbin's talk.

For information on the instructors who will be teaching the Passive Component Reliability Workshop, see the course [summary](#). And for more information on attending or exhibiting, contact Tom Terlizzi, exhibit director at [terlizzi@tjgreenllc.com](mailto:terlizzi@tjgreenllc.com) or 631-269-3820.