

Adaptive Intelligent Materials and Systems Center

*Ira A. Fulton Schools of Engineering, ASU Cordially
invites you to attend a seminar presented by*

Dy D. Le
Army Research Laboratory
Vehicle Technology Directorate

“Fatigue-Free Platforms: Vision for Army Future Vertical Lift Aircraft”

Tuesday, July 29, 2014 at 10 AM in ERC490

Abstract: The goal for Army aviation platform sustainment is “zero-maintenance”. Scientists and engineers from the U.S. Army are exploring the underpinning science and technology (S&T), which can be used to achieve this vision. Researchers from the Army Research Laboratory (ARL) and Aviation and Missile Research, Development and Engineering Center (AMRDEC) have recently developed a holistic system approach, “Virtual Risk-informed Aviation Maneuver Sustainment” (VRAMS), which integrates a wide range of technologies including the material “genome”, damage precursors, selfhealing, real-time risk assessment, autonomous state awareness at the material level, and stress-reduction methods. The Army S&T efforts aim at (a) developing superior materials, (b) understanding damage precursors and exploring advanced sensing strategies to detect them prior to the onset of microcracks or degradations, (c) advancing the capability for the intelligent self-repair of degrading components at the microscopic level before performance degradation and critical failure, (d) integrating in situ sensing elements and intelligent data collection with minimum hardware and wiring accessories, and (e) developing a robust risk assessment capability and adaptive maneuvering limitations in real time to ensure acceptable stress levels to sustain “fatigue-free” structural components without maintenance over a desirable time intervals.

Bio: In 1972, Mr. Le joined the Vietnam Air Force and became a pilot during the Vietnam War. From 72-74, he was trained at the Air Force Officer Training Center in Vietnam; Lackland Air Force Base in San Antonio, TX; and Army Aviation Center at Fort Rucker, AL. In 1974, he was commissioned and received his aviator rotary-wing from Fort Rucker, returned to Vietnam, and served at Nha Trang Air Force Base. In 1986/92, he graduated from the Pennsylvania State University with a BS & MS in Mechanical Engineering/Science. From 86-97, he was a Propulsion Research Engineer/Lead at the Naval Air Propulsion Center located in Trenton, NJ. From 1997-2008, he joined the FAA Technical Center in Atlantic City, NJ as a Program Manager focusing on the Rotorcraft Damage Tolerance/Health & Usage Monitoring System research. From 2008-present, he is the Mechanics Division Chief from the ARL Vehicle Technology Directorate responsible for Platform Mechanics, Reliability, and Diagnostics.

Mr. Le's professional contributions have been recognized via:

PUBLICATION HIGHLIGHTS:

- "Fatigue-Free" Platforms: Vision for Army Future Rotorcraft"
- "Fastran Analysis of Coupons with Residual Stresses due to Overload & Cold-Worked Holes"
- "An Evaluation of the Applicability of Damage Tolerance to Dynamic Systems"
- "Crack Growth Prediction in a Complex Helicopter Component Under Spectrum Loading"
- "Quantifying Fatigue Crack Growth in Residual Stress Fields for Applications to Rotorcraft"
- "Stress-Intensity Factor and Fatigue Crack Growth Analyses for Rotorcraft"
- "Implementation of Damage Tolerance Concept for Metallic Rotorcraft Structures and Drive"
- "Condition-Based Maintenance Plus and Maintenance Credit Validation"
- "Experience With Health and Usage Monitoring System in Rotorcraft" - Encyclopedia
- "Real-Time Micro- Explosive Damage Detection in an URV Using Embedded Sensing"
- "Health and Usage Monitoring System (HUMS) for Aircraft Usage Monitoring"
- Developed FAA first HUMS Roadmap and R&D Strategic Plan for certification of HUMS on civil transport helicopters

PROFESSIONAL ACTIVITIES:

- Keynote speech at UCI Chataqua on "Materials Genome"
- Keynote Speaker, U.S. Army Annual Aviation Safety Stand-Down Ceremony, Boeing
- TTCP ARL lead on Structures & Dynamics of Aero Vehicles
- Recipient of the Harry T. Jensen Award from the AHS International for leading successful Govt-Industry RCDT research
- Received Commendation Letters from the US Coast Guard for leading the ARL team to support the H-65 helicopter accident investigation
- Army Medal for Supporting Soldiers
- Army COHORT Senior Leadership Developmental Program • Elected President of the FAA APAC

Refreshments will be served

