

**UW Collaborative Center for Advanced Manufacturing (CCAM)
Aerospace Executives Forum -- Speaker & Moderator Bios (alphabetical)**



“Potential Inefficiencies in Composite Applications & Mitigation with PDA”
Jonathan Bartley-Cho, Structural Engineer, Northrop Grumman

Mr. Bartley-Cho has worked in structures R&D at Northrop Grumman Aerospace Systems for past 20 years on variety of research topics including design and analysis of composite and metallic structures, optimization, smart structures and materials. His most recent responsibilities include development of predictive methods for composite bolted joints and bonded pi joints as well as airframe layout and sizing for next generation tactical aircraft. He has supported a number of programs including Environmentally Responsible Aviation (ERA), Revolutionary Configurations for Energy Efficiency (RCEE), High Lift over Drag Active (HiLDA) Wing, Low-band Antenna Structure (LOBSTAR), Smart Wing Phase 2, Advanced Lightweight Aircraft Fuselage Structure (ALAFS), and Advanced Technology Redesign of Highly Loaded Structures (ATROHS). He received his MS in Solids and Structures from UCLA.



Dean’s Welcome Address
Prof. Michael Bragg, Frank & Julie Jungers Dean of Engineering, UW

Dr. Michael B. Bragg joined the University of Washington in July 2013. In that capacity, he serves as the chief academic officer of the college and provides leadership to over 240 faculty and more than 6,800 students. The College of Engineering at the University of Washington is a top ranked engineering college with annual research expenditures exceeding \$127 million. He is an international expert on the effect of ice accretion on aircraft aerodynamics and flight safety. Dean Bragg has been nationally recognized for his research and teaching. He has authored over 200 technical publications, and continues to maintain an active research program. Under his guidance more than 60 graduate students and five post-doctoral researchers received their advanced degrees.



Event Moderation & Announcements
Gaia Borgias Brown, External Relations Officer, UW A&A

Ms. Borgias Brown runs the External Relations office for the University of Washington William E. Boeing department of Aeronautics and Astronautics. In this role, she helps the aerospace industry access student talent, initiate multi-party collaborations, and identify potential research partners with specific expertise in plasma science, fluids, structures, and controls.



“Integrated solution to simulate the manufacturing of structural composite components”
Mark Doroudian, Director of Engineering, ESI North America

Mark Doroudian has an MS in Mechanical Engineering from University of Oklahoma and a BS in Mechanical Engineering from the University of Texas at Austin. He has 20+ years experience as an engineer & consultant on Automotive & Aerospace programs, applying computation fluid dynamics, finite element analysis, and CAE methods in the focus areas of fluid flow, aerodynamics, cooling, heat protection, structural dynamics, loads, & thermal stress. Recent applications include composite manufacturing and performance.



"Bringing Additive Manufacturing To Space."

Jason Dunn, Co-Founder & CTO, Made In Space, Inc.

Jason founded Made In Space in 2010 as a result of analyzing the best possible approaches to enabling a fully sustainable form of space colonization. With a core focus on space manufacturing, the company has since built, flown, and operated the first 3D printer in space. Installed on the International Space Station, the Made In Space Zero-Gravity 3D printer began space manufacturing in November, 2014. Jason serves as the Chief Technology Officer, overseeing the technical program management on projects and development of the technology roadmap for the company. Jason holds two degrees in Aerospace engineering, has studied at the Singularity University Graduate Summer Program, and is an internationally recognized speaker on the topics of space exploration and the theory of disruption. In 2014, Jason and his three co-founders were recognized by Forbes on the prestigious 30 under 30 list for manufacturing.



"Composite Aircraft Structures Certification and Progressive Damage Analysis"

Dr. Stephen P. Engelstad, Senior Fellow, Lockheed Martin

Dr. Engelstad is a Lockheed Martin Senior Fellow with specialty in Computational Mechanics and Composite Structures. He holds a Ph.D. in Engineering Mechanics from Virginia Polytechnic Institute and State University. He has 28 years experience in the aircraft industry in the areas of structural analysis, composites, aircraft certification, bonded joints, aircraft survivability analysis, optimization, structural dynamics and acoustics, and sonic and high cycle fatigue. He currently serves as Technical Lead for an LM Aero Advanced Development Programs Structures R&D group, and as an LM consultant to aircraft programs for structural analysis. He is a member of the United States Air Force Scientific Advisory Board (SAB), and the NASA Structures Technical Discipline Team.



"Techniques for Modeling AM Applications" (with Prof. Storti)

"Additive Manufacturing for Large Aerostructures" (Panel Moderator)

Prof. Mark Ganter, Professor & Co-Director of the Solheim Rapid Manufacturing Lab, UW

Dr. Mark Ganter is involved in applied computational geometry, solid modeling and computer graphics. His main research activities focus on application of computational techniques to engineering problems. His research involves the development of new data representation for solid modeling (termed implicit solid modeling or F-Reps), development of implicit solids for design, development of implicit solids for layered manufacturing, extension of techniques for skeleton generation for implicit solid modeling, refinement of previously developed surface-surface intersection algorithms. Current work focuses on 3D volume (voxel) space representations, object segmentation (including biological), wavelets representations of volume data. Development of new materials and processes for 3D printing and 3D printing systems (including ceramic printing materials).



"Additive Manufacturing for Large Aerostructures" (Panelist)

Dr. Arash Ghabchi, Boeing

Arash holds a Ph.D. degree in Materials Science and Engineering and a bachelor's degree in Metallurgical Engineering. He is a Material and Process Engineer in Boeing Research & Technology, Metallic Materials. Arash is currently working on titanium cost reduction activities dealing with development and implementation of additive manufacturing technologies and powder metallurgy technology on Boeing's commercial platforms. Before joining metals team Arash worked in BR&T Chemical Technology and was principal investigator responsible for development of thermal spray coatings for hexavalent chromium reduction. Before joining Boeing Company he worked as research scientist in advance material team in Technical Research Center of Finland (VTT) developing thermal spray coating for tribological applications and understanding their failure and degradation mechanisms.



"Blue Origin & New Shepard Additive Manufacturing Considerations"

Giovanni Greco, Product Group Lead - Structural Design and Configuration, Blue Origin

Giovanni Greco joined Blue Origin in 2010 and has 20 years of experience as a Structural Engineer in the automotive, marine and aerospace industries. Gio's primary fields of focus have been around composite structures, optimization techniques, and innovation related to use of emergent materials and analytical tools. Gio has B.S. and M.S. degrees in Mechanical Engineering from Rensselaer Polytechnic Institute.



"Accelerating Composite Manufacturing"

Ted Hile, Custom Manufacturing Manager Globe Machine Manufacturing Company

Ted Hile has spent almost three decades in manufacturing industries. His experience ranges from basic materials processing to advanced composite structure production for aerospace and defense companies. In roles with Loctite Corporation, General Plastics Manufacturing Company, Century Design, and now Globe Machine, Ted has engaged in new product design and development, project and program management, manufacturing process innovation, continuous improvement leadership and full-spectrum technical marketing. Ted's current job at Globe Machine involves assembling accelerated process systems for rapid, automated and cost-efficient production of composite structures and assemblies.



"In-Space Additive Manufacturing of Spacecraft Structures"

Dr. Robert P. Hoyt, President, CEO, & Chief Scientist, Tethers Unlimited, Inc.

Dr. Rob Hoyt is a relentlessly inventive Technologist and CEO with expertise in additive manufacturing, space systems, advanced space propulsion, plasma physics, scientific algorithms, and commercial applications of space technologies. He co-founded Tethers Unlimited Inc., and has built it into a multi-\$M space and defense R&D firm. He also co-founded ScienceOps Inc., a big-data algorithm and web analytics firm sold to Acquisio in 2012. Over the past twenty years he has pioneered the development of technologies for in-space manufacturing of spacecraft, affordable mitigation of orbital debris and radiation belts, and propellantless propulsion for spacecraft.



"Additive Manufacturing - Future Applications" (Panel Moderator)

Prof. Ramulu Mamidala, Professor, Mechanical Engineering, UW

Ramulu Mamidala is the Boeing-Pennell Professor of Engineering at the University of Washington. Mamidala's research interests reflect the multi-disciplinary nature of materials, mechanics and manufacturing engineering, and primarily focuses on aircraft materials and structures. He has very successful research programs in fracture mechanics, fatigue and manufacturing engineering. His research has been supported by NSF, AFOSR, Boeing, GE Super abrasives, Paccar, TRW, Flow International, Quest, Electro Impact, Kyocera, Pacific Northwest Labs, McDonald Douglas, and Puget Sound Naval Ship Yard. He is an international expert on the machining and surface integrity of composite materials and structures.



"Automated Layup of Aerospace Composites"

Andrew Purvis is Mechanical Engineer, Project Manager at Electroimpact Inc.

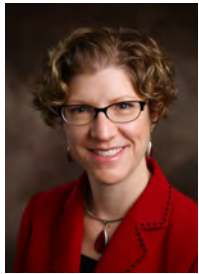
During the past 15 years at Electroimpact, Purvis has helped design, build, and install integrated manufacturing lines for Aerostructure companies all over the world. He currently manages projects involving automated composite part fabrication and layup. The primary technologies he specializes in are flexible manufacturing cells built around quick change modular process heads. These modular process heads include, Automated Fiber Placement (AFP), Automated Tape Laying (ATL). AFP and ATL are the primary additive manufacturing technologies used in production of large composite parts for the Aerospace industry.



"Challenges of Dynamic Simulation of Discrete Events in Composite Structures"

Dr. Mostafa Rassaian, Technical Fellow The Boeing Company

Dr. Mostafa Rassaian is a Boeing Technical Fellow with a specialty in Computational Structural Mechanics, with a particular focus in Impact Dynamics. He holds a Ph.D. degree in Applied Mechanics from Illinois Institute of Technology in Chicago. Dr. Rassaian is responsible for leading diverse simulation solutions in the areas of dynamic events covering bird strike, hail, live fire, ballistics, open fan blade-out, and crashworthiness. He was the principal investigator for the crashworthiness certification of the 787 analysis supported by testing. He currently serves as Technical Lead for Boeing's technology capability development of non-traditional and steered-fiber laminate design optimization while implementing design rules, and developing strength methods and layup strategy to optimize for performance and manufacturability. Mostafa is an Affiliate Professor at William E. Boeing Department of Aeronautics and Astronautics, University of Washington, Seattle.



"Making Carbon Fiber Composites Circular: the CRTC Approach to Composites Recycling"

Jennifer States, Director of Business Development, Composites Technology Recycling Center (CRTC)

Jennifer States joined the Port of Port Angeles as their Director of Business Development in July 2014. She has been responsible for the launch of the Composite Recycling Technology Center (CRTC), where she serves half time as the Director of Business Development. She brings over 15 years of experience in combined industry, government and research environments, with a focus on identifying and connecting capabilities that can address emerging industry needs. Prior to joining the Port, she was Pacific Northwest National Laboratory's Program Manager for Wind and Water Power Technologies, as well as Renewable Energy for National Security. She has served on two different year-long assignments to Federal agencies in DC: with the Department of Energy's Wind and Water Power Technology Office and with the Army's Energy Initiative Task Force (EITF). She also brings commercialization experience for emerging industries, having served as a board member Oregon Wave Energy Trust.



"Techniques for Modeling AM Applications" (with Prof. Ganter)

Prof. Duane Storti, Professor & Co-Director of the Solheim Rapid Manufacturing Lab, UW

Dr. Duane Storti is co-director of the Solheim Rapid Manufacturing Lab. His research interests lie primarily in the areas of 3D printing and novel approaches to geometric design. He has significant experience working to create new materials systems for 3D printing and maintains a strong interest in new approaches to solid modeling specifically suited for compatibility with 3D medical image stacks. (The emphasis on imaging and biomechanical applications is the product of an ongoing research program with colleagues at the Seattle V.A. Hospital and the UW medical school's departments of Radiology and Orthopaedics.) Real-time interaction with models based on image stacks depends on the power of GPU-based parallel computing, so Prof. Storti's research and instructional efforts now include extensive use of CUDA with a special emphasis on application of 3D texels.



"Lower Cost Alternatives to Prepreg"

Dave Trop, Chief Engineer for BCA Structures-Product Development, Boeing

Dave has spent the majority of his 30-year Boeing career in airplane development in positions of increasing responsibility on the 777, 767, 747, and 787 programs. He has placed special emphasis on development of creative design solutions to improve airplane performance and product integrity. In recent years, Dave led the engineering development of the 787 One-Piece Fuselage Barrel; was Structures Integration Leader for 787, led the Airframe team (wing and fuselage) for 787-9 development, and led the 747-8 Wing Integrated Product Team in developing a new wing for the 747-8. Dave earned an MS in Aeronautics and Astronautics from the Massachusetts Institute of Technology, where he specialized in structural mechanics. His Master's work included research in composite aircraft fuselage damage tolerance.



"Advanced manufacturing automation efficiencies, material alternatives & waste reduction solutions" (Panel Moderator)

Prof. Mark Tuttle, Professor, Mechanical Engineering, UW

Dr. Mark Tuttle's research interests involve applied solid mechanics, composite materials and structures, adhesion mechanics, and viscoelasticity. His studies have been devoted to predicting the mechanical response of discontinuous-fiber composites, developing new composite repair technologies, the buckling response of composite laminates, optimal design of composite structures, and prediction of the long-term durability of composites. Professor Tuttle is currently Director of the Center for Advanced Materials in Transport Aircraft Structures (AMTAS). AMTAS is a consortium of 6 universities and is funded primarily by the Federal Aviation Administration. The primary focus of the center is safety and certification of the advanced composite structures used in modern transport aircraft.



Opening & Closing Remarks

"Integrated computational tools to inform material/design production decisions" (Panel Moderator)

Prof. Anthony Waas, Professor & Chair, Aeronautics & Astronautics, UW

Dr. Anthony M. Waas is Department Chair, Aeronautics and Astronautics at the University of Washington, Seattle, and is also the Boeing-Egtvedt Endowed Chair Professor of Aeronautics and Astronautics. His current research interests are related to lightweight aerostructures, with a focus on automated manufacturability, structural integrity and damage tolerance, mechanics of textile composites, stitched composites and 3D composites. He is also researching ceramic matrix "hot" structures, nano-composites, and multi-material structures. Several of his projects have been funded by numerous US government agencies and industry. In addition, he has been a consultant to several industries in various capacities, most recently with the Boeing Company in connection with the 787 Dreamliner airplane.



"Unlocking the Design Potential of Additive Manufacturing"

Dr. Robert Yancey, Vice President – Aerospace & Composites, Altair

Dr. Robert Yancey has a technical background in composite materials, additive manufacturing, design optimization, finite element modeling, and nondestructive evaluation. He holds a B.S. degree in Aeronautics and Astronautics from MIT, an M.S. degree in Engineering Mechanics from Virginia Tech, and a Ph.D. in Materials Engineering from the University of Dayton.

**UW Collaborative Center for Advanced Manufacturing (CCAM)
Aerospace Executives Forum -- UW Related Faculty (alphabetical)**

Nicholas Boechler	ME	boechler@uw.edu 206-221-6515 Research areas: Mechanics of materials, photoacoustics, nonlinear dynamics, phononic crystals and metamaterials, dynamics of micro/nanostructures
Brian Flinn	MSE	bflinn@uw.edu (206) 616-9068 Research areas: Experimental Mechanics of Materials - Fracture and Fatigue, Structure-Processing-Property Relationships of Advanced Materials, Engineering Education-Knowledge Retention and Transfer from Course to Course, Joining of Composites and Advanced Materials
Mark Ganter	ME	ganter@uw.edu (206) 543-5090 Research areas: 3D volume (voxel) space representations, object segmentation (including biological), wavelets representations of volume data. Development of new materials and processes for 3D printing and 3D printing systems (including ceramic printing materials).
Ramulu Mamidala	ME	ramulum@u.washington.edu (206) 543-5349 Research areas: Mechanics of Materials, Fracture Mechanics & Fatigue, Surface Treatment & Surface Integrity, Machining & Drilling Science of Composite Materials, Friction Stir Welding
Marco Salviato	A&A	salviato@aa.washington.edu (206) 543-2170 Research areas: Mechanical behavior of materials and structures at multiple scales, development of computational and analytical tools
Duane Storti	ME	storti@u.washington.edu 206-543-5090 Research areas: 3D printing and novel approaches to geometric design, new materials systems for 3D printing, solid modeling specifically suited for compatibility with 3D image stacks
Mark Tuttle	ME	tuttle@uw.edu 206-685-8047 Research areas: Applied solid mechanics, composite materials and structures, adhesion mechanics, and viscoelasticity
Anthony Waas	A&A	awaas@aa.washington.edu (206) 221-2569 Research areas: Composite structures, Structural stability, Biologically inspired Materials, Nanocomposites, Engineered materials
Jinkyu Yang	A&A	jkyang@aa.washington.edu (206) 543-6612 Research areas: Mechanics and dynamics of structures, Design of engineered material systems, Nondestructive evaluation and structural health monitoring

Aerospace Forum Faculty Lead:

Anthony M. Waas, Boeing-Egtvedt Chair, Professor of Aerostructures

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