

## Call for Papers

The AIAA Structures Technical Committee is sponsoring a special session on **Design, Analysis, and Certification of Additive Structures**

### AIAA SciTech 2021

January 11-15, 2021

Music City Center

Nashville, Tennessee

Additive manufacturing (AM) using 3D printing has the potential to revolutionize design of many types of structural components if the challenge of designing and fabricating components with reliability sufficient for certification can be met. Opportunities to leverage AM processes for structural improvement include low volume production, aging component replacement, piece part reduction and assembly simplification, material savings, multi-functionality, increased complexity, and weight and performance improvement through generative design optimization free from many conventional manufacturing constraints. Despite these opportunities, formidable challenges remain in manufacturing process reliability, design and analysis methodology, printed part inspection, and certification, etc. The AIAA Structures Technical Committee seeks papers of development and application addressing these challenges at the structural or component level.

Potential topics could include the following:

- AM-informed design, analysis, and optimization methods
- Generative design optimization for AM
- Lattice structure design and application
- Process-structure-property-performance relationships, sensitivities, and models
- Predictive design tools
- Multiscale approaches
- Reliability-based approaches
- Qualification/certification approaches
- Traditional building block approach
- Rapid qualification framework
- Inspection methods—in-situ and post-process, destructive and non-destructive
- Build simulation, heat treatment, and correlation

Extended abstracts of no less than 1,000 words are due **June 8, 2020**

Final manuscript due **December 1, 2020**

Detailed abstract preparation instructions and policies can be found at

<https://scitech.aiaa.org/callforpapers>

**Make sure to select the “Design, Analysis, and Certification of Additive Structures” topic option under “Structures” during submission**

Please notify us if you are planning to submit an abstract. For more information contact one of the following organizers:

**Dr. Rob Taylor**  
University of Texas at Arlington  
[taylorrm@uta.edu](mailto:taylorrm@uta.edu)

**Dr. Zhenning Hu**  
The Boeing Company  
[zhenning.hu@boeing.com](mailto:zhenning.hu@boeing.com)

## Call for Papers

The AIAA Structures Technical Committee is sponsoring a special session topic on **Innovative and Multifunctional Concepts and Approaches in Aerospace Structures**

**AIAA SciTech 2021**

January 11-15, 2021

Music City Center

Nashville, Tennessee

The American Institute of Aeronautics and Astronautics (AIAA) Structures Technical Committee Multifunctional Structures Subcommittee is very pleased to announce a call for papers to be presented in sessions on **Innovative and Multifunctional Concepts and Approaches in Aerospace Structures** within the AIAA SciTech Forum to examine advances relevant to aerospace structures including:

- Space applications that incorporate primary structure that can enhance MMOD resistance, energy storage, heat transfer, radiation protection, dimensionally stable antennae, etc.
- Aircraft structures that incorporate primary structure with other requirements such as lightning strike protection, acoustic transmission reduction, fuel storage and venting, thermal or electrical conductivity (or insulation), energy storage or radiation (such as batteries or antenna), increase of operating temperature of aerospace propulsion components, etc.
- Modeling and experimentation of predictive relationships between the structure and material composition, such as multifunctional structures taking advantage of the high specific properties at the nanoscale with the goal of translating these properties to the macroscale
- Integration for more complex phenomena and interdisciplinary couplings between the structures discipline and other traditionally separate disciplines such as aerodynamics, heat transfer, materials, control, electromagnetics, optics, chemistry, and biology, such as high-fidelity physics-based models to advance safety and reliability
- Integrated system analysis and design to couple subsystems, components, subcomponents, and environment, including innovative applications, apparatus and techniques

To this end, the Structures Technical Committee is soliciting papers with recent research, technological advancements, and systems level perspectives in the above areas. The committee welcomes submissions from government, industry, academic, and small businesses.

Extended abstracts of no less than 1,000 words are due **June 8, 2020**

Author notification of paper acceptance on or about **August 2020**

Final manuscript due **December 1, 2020**

Detailed deadline information, abstract preparation instructions, and policies can be found at:

<https://scitech.aiaa.org/callforpapers>

**Make sure to select the “Innovative and Multifunctional Concepts and Approaches in Aerospace Structures” topic option under “Structures” during submission**

Please notify us if you are planning to submit an abstract, so that we can ensure that it is included in these sessions. For more information contact one of the following organizers:

**Mr. Andrew Lovejoy**

NASA Langley

[Andrew.E.Lovejoy@nasa.gov](mailto:Andrew.E.Lovejoy@nasa.gov)

**Dr. James B. Min**

NASA Glenn

[James.B.Min@nasa.gov](mailto:James.B.Min@nasa.gov)

## Call for Papers

The AIAA Structures Technical Committee is sponsoring a Special Session on:

### Structural Joints and Repairs

January 11-15, 2021  
Music City Center  
Nashville, Tennessee

This session will focus on technology advances in the areas of design, analysis, manufacturing, inspection, testing, and performance evaluation of Structural Joints and Repairs for aerospace vehicles. Structural joints may include bonded, bolted, or new innovative joining methods. Structural repairs may include innovative design concepts, new material combinations, and/or manufacturing processes. Topics of interest may include but are not limited to: analysis & design for predicting strength and durability, structural health monitoring for assessing integrity, material selection and processing, 3D printing, non-destructive testing for damage assessment, automated joining and repair processes for repeatability and reliability. The committee welcomes submissions from government, industry, academia, and small businesses.

Abstracts must be submitted online at: <https://scitech.aiaa.org/callforpapers>

**Make sure to select the “Structural Joints and Repairs” topic option under “Structures” when prompted during submission.**

Please notify us if you are planning to submit an abstract so that we can ensure that it is included in these sessions. Please also include the line “Structural Joints and Repairs” above the title of your extended abstract. The abstracts for the special sessions will go through the same review process as abstracts for the general call for papers.

For more information, please contact one of the following organizers:

**Dr. Stephanie TerMaath**  
The University of Tennessee,  
Knoxville  
[stermaat@utk.edu](mailto:stermaat@utk.edu)  
865-974-7711

**Dr. Scott Norwood**  
Lockheed Martin  
Aeronautics Company  
[scott.norwood@lmco.com](mailto:scott.norwood@lmco.com)  
817-935-3688

## Call for Papers

The AIAA Structures and Materials Technical Committees are sponsoring a joint session on

# Applications of Artificial Intelligence and Machine Learning to Problems in Structures and Materials

## AIAA SciTech 2021

January 11-15, 2021

Music City Center

Nashville, Tennessee

The AIAA (American Institute of Aeronautics and Astronautics) Structures and Materials Technical Committees are pleased to announce a call for papers to be presented in special sessions on **Applications of Artificial Intelligence and Machine Learning to Problems in Structures and Materials** within the AIAA SciTech Forum.

Artificial Intelligence and machine learning (deep learning included) technologies offer the potential to revolutionize and streamline current processes to develop and qualify materials as well as improving our design process for aerospace structures. These sessions will examine applications of various artificial intelligence and machine learning technologies to further the development of new material and structural applications, as well as their application to design and qualification/certification. Abstracts are sought covering recent research, technological advancements, and systems level perspectives in the above areas. The committee welcomes submissions from government, industry, academic, and small businesses.

Extended abstracts are due **June 8, 2020**  
Author notification of paper acceptance August 2020  
Final manuscripts are due **December 1, 2020**

Detailed abstract preparation instructions and policies can be found at  
<https://scitech.aiaa.org/callforpapers>

**Make sure to select the “Applications of Artificial Intelligence and Machine Learning to Problems in Structures and Materials” topic option under “Structures” during submission**

Please notify us if you are planning to submit an abstract so that we can ensure it is included in these sessions. For more information contact one of the following organizers:

**Dr. Wenbin Yu**  
Purdue University  
[wenbinyu@purdue.edu](mailto:wenbinyu@purdue.edu)

**Dr. Steven Wanthal**  
The Boeing Company  
[steven.wanthal@boeing.com](mailto:steven.wanthal@boeing.com)

## Call for Papers

The AIAA Structures and Materials Technical Committees are sponsoring a special session on

# Elements of ICME for Advanced Materials and Structures

## AIAA SciTech 2021

11-15 January 2021

Music City Center

Nashville, TN

The purpose of these sessions are to advance ICME as applied to Materials and Structures. ICME initiatives focus on the **integration** of materials information (captured in models and computational tools at various length and time scales), with engineering product performance analysis/design and manufacturing process simulation. To this end, we invite papers addressing all aspects of ICME (processing and material modeling, microstructure, optimization, uncertainty quantification, structural response, etc.) as related to the analysis and experimental validation of studies that provide insight in advancing this topic. Specifically we would like to see papers addressing issues/challenges involved in the **integration** of computational materials models and design/structures/optimization over at least two length scales from “processing” to “performance”, with emphasis on structural performance.

Extended abstracts are due **June 8, 2020**

Author notification of paper acceptance August 2020

Final manuscripts are due **December 1, 2020**

Detailed abstract preparation instructions and policies can be found at

<https://scitech.aiaa.org/callforpapers>

**Make sure to select the “Special Sessions” option during submission**

Please notify us if you are planning to submit an abstract, so that we can ensure that it is included in these sessions. For more information contact one of the following organizers:

**Anthony Waas**

University of Michigan

[awaas@umich.edu](mailto:awaas@umich.edu)

**Steve Arnold**

NASA Glenn

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**Brett Bednarcyk**

NASA Glenn

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**Evan Pineda**

NASA Glenn

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## Call for Papers

The AIAA Structures Technical Committee is sponsoring  
a special session in honor of

### Dr. Stephen Engelstad

#### AIAA SciTech 2021

January 11-15, 2021

Music City Center

Nashville, Tennessee

Dr. Stephen Engelstad has recently retired from industry after serving the aerospace structures community for many years as a valued member of the R&D workforce. He remains active in the field and continues to participate in the AIAA Structures Technical Committee. Please consider honoring him by submitting an abstract to this Special Session.

Potential topics could include, but are not limited to:

- Certification of composite structures
- Composite damage predictions
- Unitized composites
- Composite fatigue

Extended abstracts of no less than 1,000 words are due **June 8, 2020**

Final manuscript due **December 1, 2020**

Detailed abstract preparation instructions and policies can be found at

<https://scitech.aiaa.org/callforpapers>

**Make sure to select the “Special Session in Honor of Dr. Stephen Engelstad” topic option under the “Structures” technical discipline when prompted during submission.**

For more information contact one of the following organizers:

**Dr. Stephen Clay**

Air Force Research Laboratory

[stephen.clay.2@us.af.mil](mailto:stephen.clay.2@us.af.mil)

**Dr. Alex Selvarathinam**

Lockheed Martin Aeronautics Company

[alex.selvarathinam@lmco.com](mailto:alex.selvarathinam@lmco.com)

## Call for Papers

The AIAA Structures Technical Committee is sponsoring  
a special session in honor of

### Dr. Steven Russell

#### AIAA SciTech 2021

January 11-15, 2021

Music City Center

Nashville, Tennessee

Steven Russell is turning 60! He recently retired after a 30 plus year career in the aerospace industry, working for Northrop, Northrop Grumman, Vought Aircraft and Triumph Aerospace Structures having had a fruitful career in aerospace structures specializing in the development of advanced structural analysis methods. He remains active in the field and continues to participate in the AIAA Structures Technical Committee. Please consider honoring him by submitting an abstract to this Special Session.

Potential topics could include, but are not limited to:

- Composite structural mechanics
- Composite damage tolerance and analysis methods
- Analysis of stress concentrations
- Stability and buckling predictions
- Novel analytical approaches
- Optimization and structural sizing methods

Extended abstracts of no less than 1,000 words are due **June 8, 2020**

Final manuscript due **December 1, 2020**

Detailed abstract preparation instructions and policies can be found at

<https://scitech.aiaa.org/callforpapers>

**Make sure to select the “Special Session in Honor of Dr. Steven Russell” topic option under the “Structures” technical discipline when prompted during submission.**

For more information contact one of the following organizers:

#### **Dawn Price**

Structural Design, Development, and Analysis Branch

NASA Marshall Space Flight Center

[Dawn.R.Phillips@nasa.gov](mailto:Dawn.R.Phillips@nasa.gov)

#### **Patrick Enjuto**

Structures Engineering

Boeing Commercial Airplanes

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## Call for Papers

The AIAA Structures Technical Committees are sponsoring a

# Special Session in Honor of Dr. Mostafa Rassaian

### AIAA SciTech 2021

11–15 January 2021

Music City Center

Nashville, TN

The AIAA (American Institute of Aeronautics and Astronautics) Structures Technical Committees are pleased to announce a call for papers to be presented in special sessions in **Honor of Dr. Mostafa Rassaian, Former Boeing Technical Fellow and active member of Structures Technical Committee** within the AIAA SciTech Forum.

This session is in recognition of the outstanding, life-long contribution of Dr. Mostafa Rassaian, a retired Boeing Technical Fellow in Structures Technology, expert in impact dynamics, leading simulation of nonlinear FEA for diverse events covering bird strike, hail, live fire, ballistics, and crashworthiness.

He was responsible for development of analytical techniques and technical approach for the crashworthiness certification of 787 paving the way for future aircraft composite structures certification by analysis. He has applied this approach to evaluate the new structural design concepts of Automobili Lamborghini for side-pole impact for crashworthiness certification.

He is the founder of the Analytical Standardization for Energy Absorption of Composite and co-chair of the CMH-17 (former MIL-HDBK-17) Working Group on Crashworthiness. He is a member of the AIAA Structures Technical Committee, the NAFEMS Dynamics Testing & Analysis Working Group, and a Fellow of the AIAA. He is an Affiliate Professor at the Department of Aeronautics and Astronautics of the University of Washington. His developed FE-based analysis methods currently used across Boeing as standard tools and implemented in LS-DYNA FE program.

**Make sure to select the “Special Session in Honor of Dr. Mostafa Rassaian” topic option under the “Structures” technical discipline when prompted during submission.**

Please notify us if you are planning to submit an abstract, so that we can ensure that it is included in these sessions. For more information contact one of the following organizers:

**Dr. Ali Najafi**

Ansys Inc.

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**Dr. Sahar Louyeh**

The Aerospace Corporation

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# SciTech 2021

## Call for Papers

### Supplemental Information for Survivability

The AIAA Survivability Technical Committee  
and the  
AIAA Structures Technical Committee  
are sponsoring a Joint Session on

### Structures for Survivability

#### AIAA SciTech 2021

January 11-15, 2021  
Music City Center  
Nashville, Tennessee

Survivability improvements for air and space systems increasingly rely on the development of new structural designs, which must be lightweight but also satisfy a demanding set of mechanical, thermal, electromagnetic, or other requirements. Examples include: (1) improved ballistic protection systems for rotary wing aircraft, (2) improved thermal protection systems for spacecraft, (3) low observability structures, (4) designs which incorporate structural health monitoring or self-healing, (5) additively manufactured structural components with properties optimized for specific applications, and (6) novel structural designs for impact mitigation and stress wave management.

Abstracts describing analytical, computational, experimental, or design research which address any aspect of the 'survivable structures' theme are encouraged. Please be sure to select "Structures for Survivability" topic option under "Survivability" when submitting your abstract online.

Interested authors may contact either of the following organizers for more information:

Vijay Goyal  
[vijay.k.goyal@lmco.com](mailto:vijay.k.goyal@lmco.com)

William Schonberg  
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Tony DiCarlo  
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