Call for Papers

The AIAA Structures Technical Committee and the Materials Technical Committees are sponsoring a Joint Special Session on

3D Woven Composites Materials and Structures

AIAA SciTech 2022
January 3-7, 2022
San Diego, CA

The AIAA (American Institute of Aeronautics and Astronautics) Structures and Materials Technical Committees solicit papers with recent research, technological advancements, and systems-level perspectives on **3D Woven Composites Materials and Structures** within the AIAA SciTech conference. It is the intention to examine advances relevant to aerospace materials and structures including:

- Design, analysis, and test of 3D woven materials and structures for aircraft and launch vehicle applications
- New analysis methods for 3D woven material and structural design and evaluation
- Novel observations of material and structural response characteristics resulting from mechanical and/or thermal loading
- Analysis method developments for process modeling including weaving, compaction, infusion, and/or cure of 3D woven preforms
- Qualification/certification approaches and challenges for 3D woven materials and structures

The committee welcomes submissions from government, industry, academic, and small businesses. All abstracts are evaluated by qualified individuals from industry, academia, or government..

Extended abstracts of no less than 1,000 words are due **June 1, 2021**
Author notification of paper acceptance on or about **August 27, 2021**
Final manuscript due **December 2, 2021**

Detailed deadline information, abstract preparation instructions, and policies can be found at:
https://www.aiaa.org/SciTech/presentations-papers/call-for-papers

Make sure to select the "3D Woven Composites Materials and Structures" topic option under "Structures" or "Materials" when technical discipline when prompted during submission.

For more information, contact one of the following organizers:

Dr. Andrew Bergan
NASA Langley Research Center
andrew.c.bergan@nasa.gov

Dr. Brett Bednarcyk
NASA Glenn Research Center
brett.a.bednarcyk@nasa.gov

Dr. Evan Pineda
NASA Glenn Research Center
evan.j.pineda@nasa.gov

Dr. Marianna Maiaru
U. Mass. Lowell
marianna_maiaru@uml.edu

Call for Papers

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

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

AIAA SciTech 2022

3-7 January 2022
Manchester Grand Hyatt
San Diego, CA

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 conference.

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 1, 2021**
Author notification of paper acceptance on or about **August 27, 2021**
Final manuscripts are due **December 2, 2021**

Detailed abstract preparation instructions and policies can be found at
https://www.aiaa.org/SciTech
Make sure to select the "Applications of Artificial Intelligence and Machine Learning to Problems in Structures and Materials" special session 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

Dr. Steven Wanthal
The Boeing Company
steven.wanthal@boeing.com

Call for Papers

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

Developments of ICME for Advanced Materials and Structures

AIAA SciTech 2022
January 3-7, 2022
San Diego, CA

The AIAA (American Institute of Aeronautics and Astronautics) Structures and Material Technical Committees solicit papers with recent research, technological advancements, and systems-level perspectives in the sessions on **Developments of ICME for Advanced Materials and Structures** within the AIAA SciTech conference. **Integrated Computational Materials Engineering (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 (references: NAP 2008, NSTC 2011, NASA/CR-2018-219771). 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. The end goal of these sessions is to catalog challenges and solutions which will facilitate the successful implementation of ICME concepts in industry and research labs. All aerospace applications (aircraft or spacecraft, such as launch vehicles), are welcome.

The committee welcomes submissions from government, industry, academic, and small businesses. All abstracts are evaluated by qualified individuals from industry, academia, or government..

Extended abstracts of no less than 1,000 words are due **June 1, 2021**
Author notification of paper acceptance on or about **August 27, 2021**
Final manuscript due **December 2, 2021**

Detailed deadline information, abstract preparation instructions, and policies can be found at:
https://www.aiaa.org/SciTech/presentations-papers/call-for-papers

Make sure to select the "Developments of ICME for Advanced Materials and Structures" topic option under "Structures" or "Materials" technical discipline when prompted during submission.

For more information, contact one of the following organizers:

Dr. Stephanie TerMaath
University of Tennessee
stermaat@utk.edu

Dr. Anthony M. Waas
University of Michigan Ann Arbor
awaas@umich.edu

Dr. Steven M. Arnold
NASA Glenn Research Center
Steven.M.Arnold@nasa.gov

Call for Papers
Enabling Next-Generation Materials

AIAA SciTech 2022
3-7 January 2022
Manchester Grand Hyatt
San Diego, CA

The AIAA (American Institute of Aeronautics and Astronautics) Materials Technical Committee (MTC) is pleased to announce the first call for papers for its new special session(s) on innovative approaches in materials.

For this session, the MTC is soliciting papers with novel results and recent research advances in the areas of realization, design, manufacturing, characterization, modeling, and certification of innovative, potentially high-risk, materials.

Topics of special interests are multi-scale/hierarchical structuring, nano-crystalline or amorphous materials, polymer engineering, materials consisting of high-contrast phase/elements and their manufacturing, interface/interphase engineering, renewable/recyclable materials, low-cost and low-energy manufacturing, scalable manufacturing (other than additive manufacturing; for additive manufacturing please see calls for "Materials and Design for Additive Manufacturing" and "Additive Manufacturing Modeling"), high-performance materials (radiation shielding, thermal interphase, dynamic impact resistance), meta-materials, and accelerated certification of novel materials. Material forms include but are not limited to polymers, ceramics, metals, and their composites. Papers that contain innovative ideas regarding physics-based atomistic simulations and nonlocal modeling of hierarchical materials are strongly encouraged.

The Materials Technical Committee welcomes submissions from government, industry, academia, and small businesses.

Extended abstracts are due **June 1, 2021**
Author notification of paper acceptance on or about **August 27, 2021**
Final manuscript due **December 2, 2021**

Detailed abstract preparation instructions and policies can be found at
https://www.aiaa.org/SciTech
Make sure to select the "Enabling Next-Generation Materials" special session 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. Paul Davidson
University of Texas at Arlington
paul.davidson@uta.edu

Dr. Josh Dustin
The Boeing Company
joshua.s.dustin@boeing.com

Dr. Ibrahim Guven
Virginia Commonwealth University
iguven@vcu.edu

Call for Papers

The AIAA Materials Technical Committee is sponsoring a special session on

Nanostructured Materials

AIAA SciTech 2022

3-7 January 2022
Manchester Grand Hyatt
San Diego, CA

The AIAA (American Institute of Aeronautics and Astronautics) Materials Technical Committee (MTC) is very pleased to announce a call for papers for special sessions on nanostructured materials. The MTC is soliciting papers with new results and recent research advances in the areas of: hierarchical methods development, structure-property relationships, performance analysis, experimental techniques and characterization, and synthesis and processing of nano-structured materials. Material forms may include but are not limited to: nanotubes, nanoparticle and nanofiber reinforced nanostructured composites, coatings, thin films, nanocrystalline metals, and multifunctional nanostructured materials. Of special interest is the development of validated computational and analytical methods that address techniques for bridging length and time scales with the intent of providing efficient, high performance, nanostructured engineering materials to the aerospace community. Additively manufactured nanocomposites are also included within the scope of this session.

Extended abstracts are due **June 1, 2021**
Author notification of paper acceptance on or about **August 27, 2021**
Final manuscript due **December 2, 2021**

Detailed abstract preparation instructions and policies can be found at
https://www.aiaa.org/SciTech

Make sure to select the "Nanostructured Materials" special session 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. Samit Roy
University of Alabama
sroy@eng.ua.edu
Dr. Don Ryu
New Mexico Tech
donghyeon.ryu@nmt.edu
Dr. Brian Wardle
Massachusetts Institute of Technology
wardle@mit.edu

Call for Papers

The AIAA Materials Technical Committee is sponsoring a special session on

Materials and Design for Additive Manufacturing

AIAA SciTech 2022

3-7 January 2022
Manchester Grand Hyatt
San Diego, CA

The AIAA (American Institute of Aeronautics and Astronautics) Materials Technical Committee is very pleased to announce a call for papers to be presented in special sessions on **Materials and Design for Additive Manufacturing** within the AIAA SciTech conference. These sessions will examine advances in Additive Manufacturing, also sometimes known as 3D Printing. Any materials-related aspect of additive manufacturing that is relevant to aerospace is acceptable for papers, including:

- Materials and material property development (polymers, metals, ceramics, fibers)
- Modeling and experimentation of predictive relationships between the processing parameters, material composition, and resulting microstructure
- Design and innovative applications
- Machines and processing
- Process monitoring and control methods
- In-space additive manufacturing
- Testing and Inspection
- Materials discipline capabilities for certification

To this end, the Materials 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 are due **June 1, 2021**
Author notification of paper acceptance on or about **August 27, 2021**
Final manuscript due **December 2, 2021**

Detailed abstract preparation instructions and policies can be found at
https://www.aiaa.org/SciTech
Make sure to select the "Materials and Design for Additive Manufacturing" special session 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. Joseph H. Koo
The University of Texas at Austin
jkoo@austin.utexas.edu

Dr. Steven Wanthal
The Boeing Company
steven.wanthal@boeing.com

Call for Papers

The AIAA Materials Technical Committee is sponsoring a special session on

Materials for Hypersonic Applications and Extreme Environments

AIAA SciTech 2022

3-7 January 2022
Manchester Grand Hyatt
San Diego, CA

The AIAA (American Institute of Aeronautics and Astronautics) Materials Technical Committee is very pleased to announce a call for papers to be presented in special sessions on **Materials for Hypersonic Applications and Extreme Environments** within the AIAA SciTech conference. Aerospace often requires materials to perform at temperature extremes or in environments filled with degradants. The Materials Technical Committee seeks to highlight research in modeling, formulation, characterization, and testing of materials for these extreme environments.

Focus areas for this topic include but are not limited to:

- Materials for hypersonic applications including material advancements, testing, characterization, and modeling
- Assessment and prevention of materials degradation due to space environment hazards such as ionizing radiation, atomic oxygen, spacecraft charging, and micrometeoroids
- Modeling, formulation, and processing of cryogenic and high temperature materials for load bearing or pressure vessel applications
- Development of thermal and environmental barrier coatings

To this end, the Materials 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 are due **June 8, 2020**
Author notification of paper acceptance August 27, 2020
Final manuscripts are due **December 1, 2020**

Detailed abstract preparation instructions and policies can be found at
https://www.aiaa.org/SciTech
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 reviewed for inclusion in this session. This session is not an appropriate forum for ITAR restricted or classified material. For more information contact one of the following organizers:

Dr. Terrisa Duenas
nanoarmor
Terrisa.Duenas@nanoarmor.com

Dr. Marlana Goldsmith
Boeing
Marlana.b.goldsmith@boeing.com

Dr. Jessica Piness
Redwire Space
Jmpiness@gmail.com

Dr. Bilim Atli Veltin
TNO & TU Delft
Bilim.atli@tno.nl

Call for Papers

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

Materials for Survivability

AIAA SciTech 2022

3-7 January 2022
Manchester Grand Hyatt
San Diego, CA

The AIAA (American Institute of Aeronautics and Astronautics) Materials and Survivability Technical Committees are very pleased to announce a call for papers to be presented in special sessions on **Materials for Survivability** within the AIAA SciTech conference. Survivability improvements for air and space systems increasingly rely on the development of new materials and composites, which must be lightweight but also satisfy a demanding set of mechanical, thermal, electromagnetic, or other requirements. This session will address:

- High toughness composite materials for aircraft
- Low observability coatings which reduce optical or radar signatures
- Smart materials which support structural health monitoring or self-healing
- Additively manufactured materials with properties optimized for specific applications

To this end, the Materials and Survivability Technical Committees (TCs) are soliciting papers with recent research, technological advancements, implementation, and realization of these concepts. The Materials and Survivability TCs welcome submissions from government, industry, academia, and small businesses.

Extended abstracts are due **June 1, 2021**
Author notification of paper acceptance on or about **August 27, 2021**
Final manuscripts are due **December 2, 2021**

Detailed abstract preparation instructions and policies can be found at
https://www.aiaa.org/SciTech
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:

Eric Fahrenthold (Survivability)
University of Texas at Austin
epfahren@mail.utexas.edu

Joseph Koo (Materials)
University of Texas at Austin
jkoo@mail.utexas.edu

Call for Papers

The AIAA Materials Technical Committee is sponsoring a special session on

Nanostructured Materials

AIAA SciTech 2022

3-7 January 2022
Manchester Grand Hyatt
San Diego, CA

The AIAA (American Institute of Aeronautics and Astronautics) Materials Technical Committee is very pleased to announce a call for papers to be presented in special sessions on **Title** within the AIAA SciTech conference.

DESCRIPTION: The focus of this topic is on the fabrication, testing, simulation, and application of multifunctional nanostructured and hierarchical composite materials for the enhancement of mechanical, thermal, electrical and optical properties of a composite material using nanotechnology. In this symposium, we invite talks in all areas of multifunctional nanocomposites research and development. Topics include but are not limited to the design, processing, characterization, and modeling of structure-property relationships of nanocomposites. Novel concepts, experimental and modeling approaches to investigate and/or improve the performance of nanocomposites for multifunctional applications such as structural, electrical, thermal, photonics are welcome. Additive manufacturing and related topics pertaining to nanocomposites are also welcome.

- Hierarchical Materials
- Multifunctional Nanostructured Materials
- Modeling and Testing of Structure-property Relationships of Nanocomposites

To this end, the Materials 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 are due **June 1, 2021**
Author notification of paper acceptance on or about **August 27, 2021**
Final manuscripts are due **December 2, 2021**

Detailed abstract preparation instructions and policies can be found at
https://www.aiaa.org/SciTech
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:

Samit Roy
University of Alabama

Brian Wardle
Massachusetts Institute of Technology

Call for Papers

The AIAA Non-Deterministic Approaches and Materials Technical Committees are sponsoring a special session on

Realizing ICME, Including UQ and Experimental Validation

AIAA SciTech 2022

3-7 January 2022
Manchester Grand Hyatt
San Diego, CA

The AIAA (American Institute of Aeronautics and Astronautics) Non-Deterministic Approaches and Materials Technical Committees are very pleased to announce a call for papers to be presented in special sessions on **Realizing ICME, Including UQ and Experimental Validation** within the AIAA SciTech conference. Topics of interest include theoretical, computational, and experimental studies focusing on different material types (i.e., metals, polymers, composites, ceramics, meta-materials, and others) and will address:

- Development and application of UQ methods for ICME
- Materials characterization and quantification (with consideration of material variations and / or uncertainties)
- Experimental validation studies addressing the variations in processing/manufacturing (i.e., conventional techniques or additive manufacturing) parameters or material features.
- Materials design under uncertainty with ICME approach
- Multi-scale modeling and design for "processing, structure, properties, performance (PSPP)" under uncertainty
- Uncertainty quantification and sensitivity analysis for ICME models
- Other uncertainty quantification and propagation problems within ICME

To this end, the Non-Deterministic Technical Approaches (NDA) and Materials (MAT) Technical Committees (TCs) are soliciting papers with recent research, technological advancements, implementation, and realization of the ICME concept, with a specific focus on UQ. The NDA and MAT TCs welcome submissions from government, industry, academia, and small businesses.

Extended abstracts are due **June 1, 2021**
Author notification of paper acceptance on or about **August 27, 2021**
Final manuscripts are due **December 2, 2021**

Detailed abstract preparation instructions and policies can be found at
https://www.aiaa.org/SciTech
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. Also, please note that this session only requires an abstract which is approximately a paragraph in length (a full manuscript is optional, but not required). For more information, please contact the organizer, Dr. Pinar Acar:

Dr. Pinar Acar (NDA and MAT TCs) Virginia Tech pacar@vt.edu

Call for Papers

The AIAA Materials Technical Committee is sponsoring a special session on

Testing and Characterization of Materials

AIAA SciTech 2022

3-7 January 2022
Manchester Grand Hyatt
San Diego, CA

The AIAA (American Institute of Aeronautics and Astronautics) Materials Technical Committee is very pleased to announce a call for papers to be presented in special sessions on **Testing and Characterization of Materials** within the AIAA SciTech conference. These sessions will examine advances in testing and characterization of materials to be utilized in any aircraft, aerospace, spacecraft, hypersonic, or other vehicle or structure. Any aspect of this broad area relevant to aerospace is acceptable for papers, including:

- Testing and characterization programs, results, or material selection efforts
- Unique challenges in testing and characterization
- New or novel materials testing techniques
- Overview or survey papers addressing available databases or consortiums
- New or novel instrumentation methods or instrumentation applications for new material types
- Extreme environment materials testing or characterization
- Analog or performance testing of materials, even in structural configurations

To this end, the Materials 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 are due **June 1, 2021**
Author notification of paper acceptance on or about **August 27, 2021**
Final manuscripts are due **December 2, 2021**

Detailed abstract preparation instructions and policies can be found at
https://www.aiaa.org/SciTech
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:

Dr. Evan Pineda
NASA Glenn Research Center
evan.j.pineda@nasa.gov

Dr. Jonathan B. Ransom
NASA Langley Research Center
jonathan.b.ransom@nasa.gov

Call for Papers

The AIAA Materials Technical Committee is sponsoring a special session on

Thermoset Materials for Additive Manufacturing

AIAA SciTech 2022

3-7 January 2022
Manchester Grand Hyatt
San Diego, CA

The AIAA (American Institute of Aeronautics and Astronautics) Materials Technical Committee is very pleased to announce a call for papers to be presented in special sessions on **Thermoset Materials for Additive Manufacturing** within the AIAA SciTech conference. Materials can be categorized into following areas but not limited to:

- Low Temperature Thermosets
- High Temperature Thermosets
- Liquid Thermoplastics

To this end, the Materials 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 are due **June 1, 2021**
Author notification of paper acceptance on or about **August 27, 2021**
Final manuscripts are due **December 2, 2021**

Detailed abstract preparation instructions and policies can be found at
https://www.aiaa.org/SciTech
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:

Dr. Abdullah Kafi
RMIT University
abdullah.kafi@rmit.edu.au

Dr. Hao Wu
KAI
wuhaomac@gmail.com