October 12-14, 2019
Boston, USA

Venue: DoubleTree by Hilton Boston
Address: 821 Washington Street, Chinatown, Boston, MA 02111, USA
https://doubletree3.hilton.com/en/hotels/massachusetts/doubletree-by-hilton-hotel-boston-downtown-BOSCODT/index.html

2019 6th International Conference on Mechanical, Materials and Manufacturing (ICMMM 2019)

With Workshop

2019 International Conference on Trends in Mechanical and Aerospace (TMAE 2019)

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Welcome Address

On behalf of the organizing committees of 2019 6th International Conference on Mechanical, Materials and Manufacturing (ICMMM 2019), we would like to extend our warm welcome to you to this event in Boston, USA from October 12-14, 2019, with its workshop of 2019 International Conference on Trends in Mechanical and Aerospace (TMAE 2019).

ICMMM 2019 aims to provide a platform for scholars, engineers, and scientists to present robust research demonstrating the expanding frontiers in the fields of Mechanical, Materials and Manufacturing. The past four events were held in Chengdu, China (2014), Paris, France (2015), Savannah, USA (2016), Atlanta, USA (2017), Orlando, USA (2018) successively.

As a workshop of ICMMM 2019, TMAE 2019 will provide an excellent international forum for sharing knowledge and results in theory, methodology and applications impacts and challenges of Mechanical Engineering and Aerospace. The conference documents practical and theoretical results which make a fundamental contribution for the development of Mechanical Engineering and Aerospace. The aim of the conference is to provide a platform to the researchers and practitioners from both academia as well as industry to meet and share cutting-edge development in the field.

Towards this end, the committee has assembled an excellent programme comprising of 5 distinguished speeches from renowned scientists from the world, and 2 parallel technical sessions.

On behalf of the organizing committee, our thanks go to respected speakers, and authors of selected papers for their outstanding contributions. We would also like to thank members of the organizing committee, anonymous reviewers and volunteers for their great efforts. Without their contribution, dedication and commitment, we would not have achieved so much. We sincerely hope that you will find the ICMMM 2019 & TMAE 2019 beneficial and fruitful for your professional development. We also hope that you will enjoy our hospitality and will have an enjoyable and memorable time in Boston.

Conference Organizing Committee
Boston, USA

Conference Committees

Conference General Chair

Ian McAndrew, Capitol Technology University, USA

Conference Local Organizing Committee

Haijun Gong, Georgia Southern University, USA

Conference Program Chairs

Young Moon, Syracuse University, USA

Nourredine Boubekri, University of North Texas, USA

Carl Moore, FAMU-FSU College of Engineering, USA

Conference Co-chair

Daniel Semere, KTH Royal Institute of Technology, Sweden

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Norainiza Saud, Unversiti Malaysia Perlis, Malaysia
Vladimir Gurau, Georgia Southern University, USA
Hugo Miguel Silva, University of Minho, Portugal

Instructions

Registration Guide:

Arrive at the conference venue --> Inform the conference staff of your paper ID --> Sign your name on the participants list --> Check your conference materials.

Checklist:

1 receipt, 1 name card, 1 printed conference abstract, 1 lunch coupon, 1 dinner coupon, 1 computer bag, 1 USB stick (paper collection).

Devices Provided by Conference Organizers:

Laptops (with MS-Office & Adobe Reader)

Projectors & screen & laser sticks

Materials Provided by Presenters:

PowerPoint or PDF files

Duration of Each Presentation:

Regular oral presentation: 15 minutes including 2-3 minutes of Q&A.

Notice:

*Certificates of listener can be collected at the registration counter.

*Certificates of presenter can be collected from the session chair after each session.

*The organizer will not provide accommodation, so we suggest an early reservation.

*One best presentation will be selected from each session. The best one will be announced and awarded by the session chair after each session in the meeting room.

*Please take care of your safety and all personal belongings, and wear your name tags during the whole conference. No responsibility or liability is accepted by conference organizer in respect of any loss or damage.

Contact Us:

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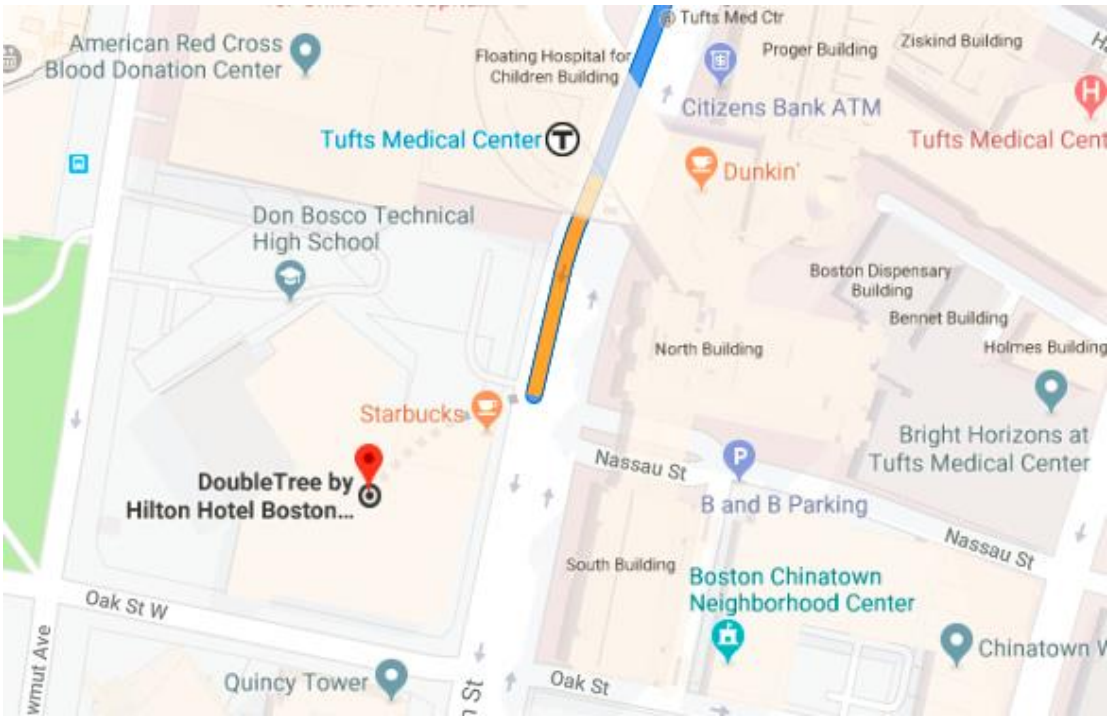
Conference Venue

DoubleTree by Hilton Boston - Downtown

Address: 821 Washington Street, Chinatown, Boston, MA 02111, USA



Directions:

1. **From the North:** Follow I93 South; Take Exit 23 Purchase Street. Stay in the right-hand lane and follow to the end take a right onto Kneeland Street (Chinatown). Travel Take a left on Washington Street. The hotel is on the right approximately 100 yards on the right.
2. **From the South:** Follow I93 North take exit 20 (Downtown/South Station); Follow signs for South Station/Chinatown. Take a left on Kneeland street at the 7th light take a left onto Washington Street. The Hotel is on the right approximately 100 yards.
3. **From the West:** Follow the I90 East (I90). Take exit #22 (Copley Sq. /Prudential Center). Stay to the right for Copley Sq. Continue straight all until you come to Washington Street. You will see a McDonalds on the left. Take a right onto Washington Street. Hotel is on the right approximately 100 yards.
4. **From Logan Airport:** Follow signs to Ted Williams Tunnel /I90. Take Ted Williams tunnel (Toll Road-estimate $3.50) take exit 24-25 (I93/South Boston. Follow Exit 25 South Boston. Keep right on the exit ramp. At end of ramp take a right on to Congress Street. At the next set of lights take a right onto D Street. Follow straight to the next set of lights & turn right onto Summer Street. Follow Summer Street straight, after you cross Atlantic Avenue (major intersection) take the next left (Surface Artery). Stay in the right-hand lane and follow to the end take a right onto Kneeland Street (Chinatown) Take a left on Washington Street. The hotel is on the right approximately 100 yards on the right.

Agenda Overview

Saturday, Oct. 12, 2019

1:00pm-5:00pm	Registration & Materials Collection <Lobby-1F>

Sunday Morning, Oct. 13, 2019

Venue: Cherry Blossom-1F

9:00am-9:10am	**Opening Remarks** Prof. Ian McAndrew, Capitol Technology University, USA
9:10am-9:55am	**Speech Ⅰ** **Insider Threats in Cyber-Manufacturing System Security** Prof. Young Moon, Syracuse University, USA
9:55am-10:25am	**Group Photo & Coffee Break**
10:25am-11:10am	**Speech Ⅱ** **Artificial Intelligence in the Aviation Manufacturing Process for Complex Assemblies and Components** Prof. Ian McAndrew, Capitol Technology University, USA
11:10am-11:55am	**Speech Ⅲ** **The Fourth Industrial Revolution: Technologies, Applications Challenges, and Research Trends** Prof. Nourredine Boubekri, University of North Texas, USA
11:55am-1:30pm	**Lunch** **< White Rose-1F>**

Sunday Afternoon, Oct. 13, 2019

Parallel Session 1

Engineering Material Design and Intelligent Manufacturing Technology

Venue: Cherry Blossom-1F

2:00pm-2:30pm	**Speech Ⅳ** **The Exciting World of Additive Manufacturing and the Steady March**

of Technology

Assoc. Prof. Carl Moore, FAMU-FSU College of Engineering, USA

2:30pm-3:30pm	Presentations: M1006 M041 M012 M014
3:30pm-3:50pm	**Coffee Break**
3:50pm-5:35pm	Presentations: M017-A M020 M043 M050 M063 M0007 M025

Parallel Session 2
Automation System and Intelligent Control
Venue: White Rose-1F

2:00pm-2:30pm	**Speech V** **Rheological Properties of Two Stainless Steel 316L Powders for Additive Manufacturing** Asst. Prof. Haijun Gong, Georgia Southern University, USA
2:30pm-3:30pm	Presentations: M023-A M0002-A M038 M0004-A
3:30pm-3:50pm	**Coffee Break** <Cherry Blossom-1F>
3:50pm-5:35pm	Presentations: M063 M1004-A M003 M1003-A M0003-A M024-A M047
6:00pm-8:00pm	**Dinner** **< White Rose-1F>**

Monday, Oct. 14, 2019

9:00am-5:00pm	**Tour in Boston** <Registration Closed>

Introduction of Speakers

Prof. Ian McAndrew
Capitol Technology University, USA

Speech Title: Artificial Intelligence in the Aviation Manufacturing Process for Complex Assemblies and Components

Abstract: Aviation manufacturing is at the leading edge of technology with materials, designs and processes where automation is not only integral; but complex systems require more advanced systems to produce and verify processes. Critical Infrastructure theory is now used to protect systems and equipment from external software infections and cybersecurity techniques add an extra layer of protection. In this research, it is argued that Artificial Intelligence can reduce these risks and allow complex processes to be less exposed to the threat of external problems, internal errors or mistakes in operation.

Bio: Prof. Ian R. McAndrew PhD is a Mechanical Engineer that has worked in education for over 27 years. His teaching and research have been globally, starting in London and now with Capitol Technology University where he is the Dean of Doctoral Programs. He has taught in over 20 countries and published with many academics from all over the world. He has 6 degrees, also a qualified Electrical Engineer and FRAeS. He has supervised over 50 PhDs and has almost 60 peer reviewed publications. His current research is in aerodynamics and low speed flight. He is a keen supporter of conferences as this is where junior researchers can develop their skills for a life in research. He is frequently invited to deliver Keynote speeches and is the Chair of several International Conferences. Additionally, he is the editor or assistant editor in chief of several International Journals.

Prof. Young Moon
Syracuse University, USA

Speech Title: Insider Threats in Cyber-Manufacturing System Security

Abstract: Security in Cyber-Manufacturing System (CMS)—where physical components are seamlessly connected with computational processes—have become one of the most critical research issues in CMS because the high-level of connectivity of CMS opens unprecedented opportunities for malicious cyber intrusions into the manufacturing system. What has been overlooked is the insider threats. Numerous reports point out the consequences of insiders' activities. Insiders are already within the security perimeter of a system so can pose severer threats than outsiders. This talk presents preliminary research findings along with a testbed that was set up to investigate various issues with the insider threats in CMS.

Bio: Prof. Young B Moon is Professor of the Department of Mechanical and Aerospace Engineering at Syracuse University, serving as the Director of the Institute for Manufacturing Enterprises, the faculty coordinator for the SAP University Alliance program and Kauffman Professor of Entrepreneurship and Innovation. He holds a Bachelor of Science degree in Industrial Engineering from Seoul National University, Seoul Korea, a Master of Science degree in Industrial Engineering and Engineering Management from Stanford University, and a Ph.D. degree in Industrial Engineering from Purdue University. His doctoral research was carried out in the NSF Engineering Research Center (ERC) for Intelligent Manufacturing Systems. Moon is a licensed P.E. (Professional Engineer) registered in the state of New York, a CFPIM (Certified Fellow in Production and Inventory Management), and a CMfgE (Certified Manufacturing Engineer). Professor Moon teaches courses and conducts research in the areas of Cyber Manufacturing Systems, Sustainable Manufacturing, Product Realization Processes and Systems, Enterprise Resource Planning (ERP) Systems, Systems Modeling and Simulation, Computer Integrated Manufacturing (CIM), Product Lifecycle Management (PLM), and Engineering Education. He has had extensive interactions with industry and has published over 80 refereed journal and conference publications. He is on Editorial Board for several international journals. He is active in a variety of capacities with numerous professional organizations including INCOSE, ABET, ASEE, IFIP, IEEE, and SME.

Prof. Nourredine Boubekri
University of North Texas, USA

Speech Title: The Fourth Industrial Revolution: Technologies, Applications Challenges, and Research Trends

Abstract: The fourth industrial revolution is having a profound impact on the global economy. The objective of this presentation is three-fold: 1) highlight some of the trends in select technologies; including Smart Materials, Robotics, Artificial Intelligence, The Internet of Things, 3D/4D printing, and other emerging technologies, 2) highlight management challenges for both developers and end users, and 3) highlight research trends in these technologies.

Bio: Dr. Nourredine Boubekri is currently a professor of Engineering at The University of North Texas. He received his Ph.D. in 1983 from the University of Nebraska Lincoln in the field of Industrial and Management Systems Engineering. He received both his Master and Bachelor of Science degrees in 1980 from Boston University in the field of Manufacturing Engineering. His experience and tenure started at the University of Miami where he began as an assistant professor in the department of Industrial Engineering. There he founded the University of Miami Industrial Assessment Center in the year 2000, which is currently still funded by DOE. His experience includes his roles as Department chair /Director of Research and Innovation at NIU (2002-2006), Department chair at UNT (2006-2010), Director of UNT SACSCOC reaffirmation (2012-206). He directed more than thirty Master and Ph.D. Students and published more than 100 technical articles and journal papers in the areas of green machining, product development, innovation and technology management, His research funding exceeds five million dollars in grants and contracts. His experience in international collaboration includes a number of programs with various institutions in China, Turkey and France.

Assoc. Prof. Carl Moore
FAMU-FSU College of Engineering, USA

Speech Title: The Exciting World of Additive Manufacturing and the Steady March of Technology

Abstract: A technology is called disruptive when it displaces established technology and turns an industry upside down. By this definition additive manufacturing (AM) is truly disruptive. In what seems like a few years AM has gone from invention to indispensable in a host of areas from human prosthesis to military equipment procurement. No doubt, AM is here to stay, but how many people realize that it is not really a new technology? AM was invented in the 1970s, and the first AM patents were granted in the '80s. But just as it took time after the birth of personal computers before must homes had one, I believe we have not yet experienced how AM will revolutionize our world. Consider that the PC was so disruptive that we really don't think about what industries it displaced; we are too busy enjoying the totally new industries that it made possible including cellphones. So, an interesting question is not how AM will affect manufacturing, but how it will change our interactions with each other and our world?
In this talk, I will focus on this question as we consider the exciting current state of AM. I will illuminate the history and paths that AM is forging. Of course, no one can predict exactly how AM will change our future, but we can have a lot of fun trying

Bio: Dr. Carl A. Moore Jr. is an associate professor at the FAMU-FSU College of Engineering. He earned his B.S. in mechanical engineering from Howard University and his M.S. and Ph.D. from Northwestern University in 2001. Dr. Moore worked for two years as a research engineer and as a manufacturing engineer for Eastman Kodak Company in the Copy Products and Single-Use Camera divisions. He also has professional research experience with Ford Motor Company's Interactive Conceptual Design and Applications lab. Dr. Moore was instrumental in the development of cobots - a novel human-robot collaborative technology. His research interests include robot-based 3D printing, haptic interface design and control and teleoperation. Currently, through a National Science Foundation (NSF) Historically Black Colleges and Universities Research Infrastructure for Science and Engineering (HBCU-RISE) grant, Dr. Moore is training underrepresented students in robot-based additive manufacturing. This project is slated to increase underrepresented student enrollment and retention. Dr. Moore has published 22 papers in robotics, graduated 12 graduate students, and been awarded $5.2 million as principal or co-principal investigator. In the classroom, Dr. Moore enjoys using active learning technologies including flipped classroom instructional methods. He and his wife have five children and live in Tallahassee, Florida.

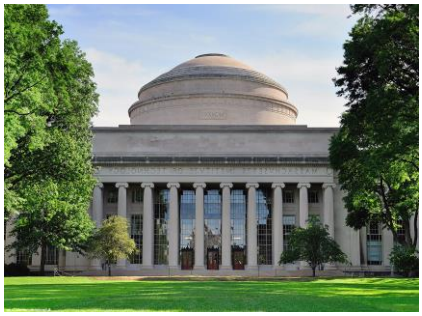
Asst. Prof. Haijun Gong
Georgia Southern University, USA

Speech Title: Rheological Properties of Two Stainless Steel 316L Powders for Additive Manufacturing

Abstract: This study measures the rheological properties of two stainless steel 316L powders which are used for the powder-bed-fusion based additive manufacturing process. The purpose is to evaluate the newly acquired powder in comparison with the used and recycled powder, so that both powders can be mixed with each other to supplement the powder usage. The powder rheology properties, such as dynamic property, bulk property, and shear property, are tested and compared. The results and analysis confirm the compatibility of powder mixing.

Bio: Dr. Gong' s research interest concentrates on characterizing the material properties of metal additive manufacturing product including titanium alloy, cobalt chrome, aluminum alloy, etc., as well as simulating their laser or electron melting and solidification process. He is interested in applying the knowledge of additive manufacturing materials for the advanced manufacturing processes. Dr. Gong is also interested in additive manufacturing and 3D printing process development, aiming to fully incorporate this technology into the modern manufacturing process.

Tour in Boston

University Visit: Harvard University & MIT Boston Campus

Chill Time at Quincy Market


Back to Old Time of Boston: Boston Public Library & Trinity Church

Note:

1. Information above is only for reference. The itinerary may vary based on the number of participants.
2. Tickets and lunch are included.
3. The tour is from 9am to 5pm on 14th October, and the pick-up point is the lobby at DoubleTree-Downtown.