



# **THE INTERNATIONAL CONFERENCE ON**

**COMPUTATIONAL & EXPERIMENTAL  
ENGINEERING AND SCIENCES**

**JANUARY 8-12, 2022  
VIRTUAL CONFERENCE  
PROGRAM**

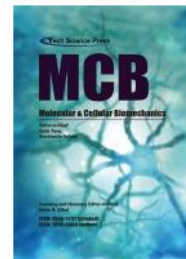
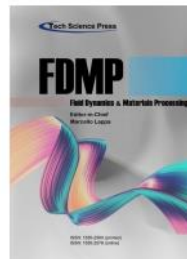
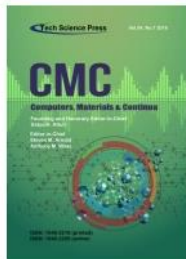
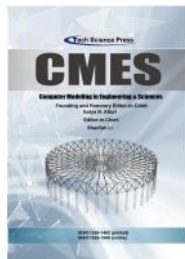


**International Conference on Computational & Experimental Engineering and Sciences  
ICCES2022  
January 8-12, 2022  
Virtual**

**Conference program**

Organized by  
Tech Science Press

Sponsors



Contact Information  
ICCES Secretariat  
Email: [icces@techscience.com](mailto:icces@techscience.com)  
Tel: +1 702 673 0457 Fax: +1 844 635 2598

## **Content**

Content .....	3
About ICCES.....	4
Committee.....	5
Program at a Glance .....	7
Conference Schedule.....	8
Invited Speakers.....	13
Contributed Session Chairs .....	21
Contact.....	26

## **About ICCES**

The International Conference on Computational & Experimental Engineering and Sciences (ICCES) was initially founded in 1986 by Professors Satya N Atluri and Genki Yagawa, to become a forum for then burgeoning discipline of Computational Mechanics. It was the first such international conference.

The field has since grown, and the conference has grown with it: today, ICCES encompasses several disciplines and is comprised of highly skilled and reputable researchers from global academia, industry and governments with expertise in computational and experimental engineering and sciences.

The conference aims to strengthen ties and encourage interaction between highly talented individuals in engineering, life sciences, and the physical sciences, and to promote research at their interfaces, so that the fast-paced development in these disciplines can be quickly translated in to engines for global economic growth.

## **History**

The International Conference on Computational & Experimental Engineering and Sciences (ICCES) founded in 1986 by Prof. Satya N. Atluri and Prof. Genki Yagawa is comprised of highly skilled and reputable researchers from global academia, industry and governments with expertise in computational and experimental engineering and sciences. Since inception, ICCES has held the following international gatherings:

ICCES 1986 in Tokyo, Japan;  
ICCES 1988 in Atlanta, USA;  
ICCES 1991 in Melbourne, Australia;  
ICCES 1992 in Hong Kong, China;  
ICCES 1995 in Big Island, Hawaii, USA;  
ICCES 1997 in San Jose, Costa Rica;  
ICCES 1998 in Atlanta, USA;  
ICCES 2000 in Los Angeles, USA;  
ICCES 2001 in Puerto Vallarta, Mexico;  
ICCES 2002 in Reno, USA;  
ICCES 2003 in Corfu, Greece;  
ICCES 2004 in Madeira, Portugal;  
ICCES 2005 in Chennai, India;  
ICCES 2007 in Miami, USA;  
ICCES 2008 in Honolulu, USA;  
ICCES 2009 in Phuket, Thailand;  
ICCES 2010 in Las Vegas, USA;  
ICCES 2011 in Nanjing, China;  
ICCES 2012 in Crete, Greece;  
ICCES 2013 in Seattle, USA;  
ICCES 2014 in Changwon, Korea;  
ICCES 2015 in Reno, USA.

ICCES 2017 in Madeira Island, Portugal.

ICCES 2019 in Tokyo, Japan.

ICCES 2020/21 in Montenegro.

Virtually each year since the inaugural conference in 1986, ICCES conferences have brought together over 500 of the world's most respected researchers in disciplines such as Nanoscience and Technology; Nanostructured Materials; Engineering, Biology and Medicine; Bio-MEMS/Bio-NEMS/Labs-on-Chips/Life-Chips, Complex Engineering Systems; Molecular and Cellular Biomechanics; Computers, Materials, & Continua; Computer Modeling in Engineering & Sciences; Sustainability, Environment, & Climate; Disaster Prevention & Control; Computational Biology, Biomechanics and Bioengineering; Meshless and Novel Computational Methods; Soft Computing and Fuzzy Logic, etc.

ICCES is primarily geared towards strengthening ties and encourage interaction between highly talented individuals in engineering, life sciences, and the physical sciences, and to promote research at their interfaces, so that the fast-paced developments in these disciplines can be quickly translated in to engines for global economic growth.

ICCES conferences have attracted the attention of various national academies, national governments, and multinational corporations where for brief example, the 1991 conference was inaugurated by the Australian Minister of Science and the 1997 conference in 1997 was inaugurated by the Costa Rican Minister of Education and Technology. A comprehensive inaugural address on Science Policy was given in the 2005 Chennai, India conference by His Excellency Dr. APJ Abdul Kalam, the then President of the Republic of India. The conference in Chennai was also financially supported by such industrial giants as Tata Consultancies, Caterpillar Inc, etc.

In recognition of distinguished researchers for their life's work, outstanding young, upcoming researchers, and those who made substantial, multi-faceted contributions in engineering, industry, commerce and the sciences for the advancement of human society, awards have been instituted and given by ICCES. In 2010, the organization's highest award, the Satya N. Atluri Medal, was awarded to Dr. Ratan Naval Tata (Chairman of Tata Sons of Mumbai, India, a privately held conglomerate with assets of over 4 trillion USD) in recognition of his foresight in the Nano-World, and for his continuation of his family's legendary philanthropy.

## **Committee**

### **Founder and Honorary Chair**

**Satya N. Atluri, D.Sc**

Presidential Chair & University Distinguished Professor    Texas Tech University, USA

**Organizing Committee of ICCES2022 (Alphabetically ordered by last name)**

Prof. Yongchang Cai	Tongji University, China.
Prof. Maosen Cao	Hohai University, China.
Prof. Jiabi Chen	University of Shanghai for Science and Technology, China.
Prof. Wen-Hwa Chen	National Tsing Hua University, Taiwan.
Prof. Honghua Dai	Northwestern Polytechnical University, China.
Prof. Leiting Dong	Beihang University, China.
Prof. Jitang FAN	Beijing Institute of Technology, Beijing, China.
Dr. Jeffrey Fong	National Institute of Standards & Technology, USA.
Prof. Boyun Guo	University of Louisiana at Lafayette (UL Lafayette), USA.
Prof. Albert S Kobayashi	University of Washington, Seattle, USA.
Dr. H.K. Lee	Korea Advanced Institute of Science & Technology, South Korea.
Prof. Xide Li	Tsinghua University, China.
Dr. Pedro Marcal	Stanford University, USA.
Prof. Demosthenes Polyzos	University of Patras, Greece.
Prof. Bozidar Sarler	University of Nova Gorica, Slovenia.
Prof. Guangyu Shi	Tianjin University, China.
Prof. Jan Sladek	Slovak Academy of Sciences, Slovakia.
Prof. Jurica Soric	University of Zagreb, Croatia.
Prof. Shenping Shen	Xi' an Jiaotong University, China.
Prof. Antonio Tadeu	University of Coimbra, Portugal.
Dr. Vinod Tewary	National Institute of Standards & Technology, USA.
Prof. Igor Vusanovic	University of Montenegro, Montenegro.
Prof. Jizeng Wang	Lanzhou University, China.
Prof. Zhihai Xiang	Tsinghua University, China.
Prof. Bo Yu	Beijing Institute of Petrochemical Technology, China.

**Organizing Committee of ICCES2022**

Prof. Igor Vušanović	University of Montenegro, Montenegro
Prof. Uroš Karadžić	University of Montenegro, Montenegro
Prof. Mileta Janjić	University of Montenegro, Montenegro
Prof. Radoje Vujadinović	University of Montenegro, Montenegro
Mr. Rade Grujičić	University of Montenegro, Montenegro

Mr. Vidosava Vilotijević  
Mr. Stefan Čulafić

University of Montenegro, Montenegro  
University of Montenegro, Montenegro

## Program at a Glance

ICCES 2022 Program at A Glance Session times are in Dubai time, UTC/GMT +4 hours All live sessions on ZOOM					
Time	Day1 Saturday January 8	Day 2 Sunday January 9	Day 3 Monday January 10	Day 4 Tuesday January 11	Day 5 Wednesday January 12
11:00-13:30		Parallel Sessions	Parallel Sessions	GS1	GS2
13:30-15:00		Parallel Sessions	Parallel Sessions		
16:00-20:00	Opening Remarks Plenary/ Semi-plenary Session	Plenary/ Semi-plenary Session	Parallel Sessions		
20:00-22:00	Plenary/ Semi-plenary Session	Plenary/ Semi-plenary Session	Parallel Sessions		

## Conference Schedule

<h3>Conference Schedule</h3> <p><b>Session times are in Dubai Time, GMT (Universal Time) +4 hours</b></p> <p>All Live sessions will be done via <b>ZOOM</b></p> <p>Q&amp;As will be held asynchronously via <b>Slack</b></p>		
<p><b>Day 1– Saturday, 8th January 2022</b></p>		
<p><b>16:00-19:20 UTC/GMT +4 hours Opening Remarks/Plenary/Semi-plenary Session</b></p>		
<p>Zoom Link: <a href="https://us06web.zoom.us/j/8958897871?pwd=bS9VYjNJZHNSaWxFREYyYmEwWkFTdz09">https://us06web.zoom.us/j/8958897871?pwd=bS9VYjNJZHNSaWxFREYyYmEwWkFTdz09</a></p> <p>Meeting ID: 895 889 7871</p> <p>Passcode: icces</p>		
16:00-16:10	10min	<p><i>Opening Remarks</i></p> <p><b>Dr. John Chen</b> Tech Science Press</p>
16:10-16:40	30min	<p><i>Hydrovoltaics</i></p> <p><b>Prof. Wanlin GUO</b> Institute of Nano Science, Nanjing University of Aeronautics and Astronautics <i>Sequential and Concurrent</i></p>
16:40-17:10	30min	<p><i>Beam elements and their applications in various fields of structural dynamics</i></p> <p><b>Prof. Daigoro Isoe</b> University of Tsukuba</p>
17:10-17:40	30min	<p><i>Failure and fracture in soft materials and biological tissues</i></p> <p><b>Vijay B. Shenoy</b> Centre for Condensed Matter Theory, Department of Physics, Indian Institute of Science, India</p>
17:40-17:50	10min	<p><b>Networking Break</b></p>
17:50-18:20	30min	<p><i>Failure and fracture in soft materials and biological tissues</i></p> <p><b>Prof. Konstantin Volokh</b> Technion – Israel Institute of Technology</p>
18:20-18:50	30min	<p><i>Award Lecture</i></p> <p><b>Prof. Cheinshan Liu</b> National Taiwan University</p>
18:50-19:20	30min	<p><i>Multiscale Modeling of 2D Materials from Molecular Dynamics to Continuum Mechanics</i></p> <p><b>Prof. James D. Lee</b> The George Washington University Washington</p>
19:20-19:50	30min	<p><i>Analytical Dynamics and the Control of Nonlinear Systems: New Connections That Provide Explicit Control</i></p> <p><b>Prof. Firdaus E. Udwardia</b> University of Southern California</p>



19:50-20:20	30min	<i>Modelling and simulation of acoustic and elastic metamaterials</i> <b>Prof. Chuazeng Zhang</b> University of Siegen
-------------	-------	--

**Day 2– Sunday, 9th January 2022**

**13:00-15:00 UTC/GMT +4 hours Parallel Sessions**

**Session 1**

*S1: Computational Methods in Space Flight Mechanics*  
*S4: Computational and experimental methods in biomedical and biomechanics engineering*  
*S5: A Special Symposium on Computational/Experimental Aeroelasticity and Aerothermoelasticity*

**Session chair: Dan Xie**, Associate Professor, School of Astronautics,  
NPU, Northwestern Polytechnical University, China

Sunday, 9th January 2022 13:00-14:30 (GMT +04:00, Dubai)

Zoom Link: <https://us06web.zoom.us/j/8958897871?pwd=bS9VYjNjZHNsaWxFREYyYmEwWkFtdz09>  
Meeting ID: 895 889 7871  
Passcode: icces

Time	Title	Speaker
<b>13:00-13:10</b>	Geometric Interpretation and Step Size Adjustment Method for Iteration Pseudospectral Method	Zhe Zhang
<b>13:10-13:25</b>	Aeroelastic Analysis of a Supercritical Airfoil with Free-play in Transonic Flow	Shun He
<b>13:25-13:35</b>	State and Covariance Matrix Propagation for Continuous-Discrete Extended Kalman Filter Using Modified Chebyshev Picard Iteration Method	Imran Ali
<b>13:35-13:45</b>	Decoupling and Quasi-linearization methods for Spacecraft Relative Orbit Transfer Problems	Haoyang Feng
<b>13:45-13:55</b>	Design of regeneratively cooled combustion chamber of a RBCC engine	Tingting Jing
<b>13:55-14:10</b>	Post-buckling and Panel Flutter of Pre-heated Functionally Graded Plates	Wei Xia
<b>14:10-14:20</b>	Role of Gluex the ion exchange mechanism of CLCF F-/H+ Antiporter	Akihiro Nakamura
<b>14:20-14:30</b>	Reduced order model based on SPOD for aerothermoelastic analysis of a hypersonic panel	Chunxiu Ji
<b>14:30-14:45</b>	Compact Ultra-Wideband Antenna for Microwave Imaging Applications	Sachin Kumar

**Session 2**

*General Topics*

**Session chair: Jiangshuai Wang**, Dr., Changzhou University, Jiangsu, China

Sunday, 9th January 2022 13:00-14:30 (GMT +04:00, Dubai)

Zoom Link: <a href="https://us06web.zoom.us/j/85122629891?pwd=WnJQM0RySGZINIBLMXA2dVd6ekVrQT09">https://us06web.zoom.us/j/85122629891?pwd=WnJQM0RySGZINIBLMXA2dVd6ekVrQT09</a>			
Meeting ID: 851 2262 9891			
Passcode: icces			
Time		Title	Speaker
13:00-13:15		Effects of Roughness and Texture on Surface Material Perception in Virtual Environments: The Psychophysics Approach	Mutian Niu
13:15-13:30		Research on Cement Sheath Integrity under High Temperature During In-situ Development for Shale Oil Well	Xueli GUO
13:30-13:45		A Novel Model to Calculate the Fluctuating Pressure in Eccentric Annulus for Bingham Fluid	Jiangshuai Wang
13:45-13:55		High Strain Rate Behavior of Harmonic Structure Designed Pure Nickel: Mechanical Characterization, Microstructure Analysis and Modelisation	Daniel Varadaradjou
13:55-14:05		Forest Environment Association Analysis for the Pandemic Health with Rectified Linear Unit Correlations	Hong Wei Shi
<b>16:00-19:00 UTC/GMT +4 hours Plenary/Semi-plenary Session</b>			
Zoom Link: <a href="https://us06web.zoom.us/j/8958897871?pwd=bS9VYjNjZHNsaWxkFREYyYmEwWkFTdz09">https://us06web.zoom.us/j/8958897871?pwd=bS9VYjNjZHNsaWxkFREYyYmEwWkFTdz09</a>			
Meeting ID: 895 889 7871			
Passcode: icces			
16:00-16:30	30min	<i>Data-driven based modulus prediction of cancellous bone for defect repair in clinic treatment</i> <b>Prof. Zhuo Zhuang</b> Tsinghua University	
16:30-17:00	30min	<i>Microwave imaging for breast cancer detection</i> <b>Prof. Lulu Wang</b> Shenzhen Technology University	
17:00-17:30	30min	<i>Multiscale and Multiphysics Modeling of Heterogeneous Materials</i> <b>Prof. Guannan Wang</b> Zhejiang University	
17:30-17:40	10min	<b>Networking Break</b>	
17:40-18:10	30min	<i>Notes on Chemomechanics</i> <b>Prof. Shengping SHEN</b> Xi'an Jiaotong University	
18:10-18:40	30min	<i>The strange ways of surface tension in turbulence</i> <b>Prof. Rama Govindarajan</b> International Centre for Theoretical Sciences	
18:40-18:50	30min	<i>Closing Remarks</i> <b>Dr. John Chen</b> Tech Science Press	

Day 3 – Monday, 10th January 2022		
11:00-13:00	UTC/GMT +4 hours	Parallel Sessions
<p><b>Session 3</b></p> <p><i>S16: Computational &amp; Experimental Fluid/Electromagnetic Dynamics and Other Applications</i></p> <p><b>Session chair:</b> Kazuhiko Kakuda, Dr., Professor Department of Mathematical Information Engng., College of Industrial Technology, Nihon University, Japan.</p> <p>Monday, 10th January 2022    11:00-12:30 (GMT +04:00, Dubai)</p> <p>Zoom link: <a href="https://us06web.zoom.us/j/8958897871?pwd=bS9VYjNjZHNsaWxkFREYyYmEwWkFTdz09">https://us06web.zoom.us/j/8958897871?pwd=bS9VYjNjZHNsaWxkFREYyYmEwWkFTdz09</a> Meeting ID: 895 889 7871 Passcode: icces</p>		
Time	Title	Speaker
11:00-11:15	A Development of Marketing Business Game - Overview of Agent-Based Models -	SATORU KAWAKAMI
11:15-11:30	Interactive Restoration of Implicitly Defined Shapes	Jiayu Ren
11:30-11:45	Nonlinear Vibration Analysis of Horizontal Bi-directional Restoring Force Characteristics for Seismic Isolated Laminated Rubber	Ayumi Takahashi
11:45-12:00	Dynamic Behaviors after Droplet Impact onto Liquid Surface	Kazuhiko Kakuda
12:00-12:10	Experimental and Modelling Examinations of the Constitutive Behavior of IN718 Superalloy and the Heat Treatment Induced Residual Stresses in Turbine Disc	Run-Hua Song
<p><b>Session 4</b></p> <p><i>S6: Symposium in honor of Professor Padraic O'Donoghue to receive the THH Pian Medal, and Dr. Bud Brust to receive the Eric Reissner Medal</i></p> <p><b>Session chair:</b> Hiroshi Okada, Dr., Professor, Tokyo University of Science, Japan</p> <p>Monday, 10th January 2022    11:00-12:35 (GMT +04:00, Dubai)</p> <p>Zoom link: <a href="https://us06web.zoom.us/j/89683253272?pwd=ai9lancvc1JSNi9OM0xWRTI4aTQzUT09">https://us06web.zoom.us/j/89683253272?pwd=ai9lancvc1JSNi9OM0xWRTI4aTQzUT09</a> Meeting ID: 896 8325 3272 Passcode: icces</p>		
Time	Title	Speaker
11:00-11:15	Experimental and Numerical Modelling of Cyclic Softening and Damage Behaviors for a Turbine Rotor Material at Elevated Temperature	Ming Li
11:15-11:30	Crack Tip Fields in a Fiber-reinforced Hyperelastic Sheet: Competing Roles of Fiber and Matrix Stiffening	Yin Liu, Brian Moran
11:30-11:45	A Tetrahedral Mesh Generation Framework for Fracture Mechanics Analysis Based on Boundary-Fitting Techniques	Hiroshi Kawai

11:45-11:55	Fracture Mechanics in Three-Dimensional Isogeometric Models: Evaluating J-Integral as a Post Isogeometric Analysis Calculations	Omar Tabaza
11:55-12:05	The Effect of Tempering Duration on the Creep Behavior of the P91 Steels at 600°C	Jundong Yin
12:05-12:15	Construction process simulation of an art center	Huidi Zhang
12:15-12:25	Experimental and Modelling Examinations of the Constitutive Behavior of IN718 Superalloy and the Heat Treatment Induced Residual Stresses in Turbine Disc	Dong-Feng Li

**12:00-14:00 UTC/GMT +4 hours Parallel Sessions**

**Session 5**

***S9: Railway Infrastructures***

**Session chair: María de los Dolores Martínez Rodrigo, Dr., Professor, UJI, Universitat Jaume I, Castellón**

Monday, 10th January 2022 12:00-13:30 (GMT +04:00, Dubai)

Zoom link: <https://us06web.zoom.us/j/81529138368?pwd=SVJmanhhMIFwN3NZMm5PNm5BUlZdz09>  
 Meeting ID: 815 2913 8368  
 Passcode: icces

Time	Title	Speaker
12:00-12:15	Dynamic Behavior of a Historic Metallic Bridge under Metro Vehicles Based on Advanced Interaction Models	Diogo Ribeiro
12:15-12:30	Impact of the Railway Vehicle Characteristics in Its Runnability in The Presence of Strong Winds	Pedro Montenegro
12:30-12:45	Coupling effects of the ballast track infrastructure on the dynamic response of structurally independent railway bridges	M.D. Martínez-Rodrigo
12:45-13:00	Influence of the train speed on the long-term performance of the subgrade of the ballasted and ballastless tracks	Ana Ramos
13:00-13:15	Experimental Testing of a Railway Bridge with Near Viscous Dampers	Andreas Andersson

**Session 6**

***S11: Advanced Computational Methods for Gradient and Nonlocal theories for Multidisciplinary and Multiphysics Problems***

***S12: Image Processing and Analysis***

***S15: Multiscale and Multiphysics Modeling of Heterogeneous Media***

**Session chair: Nicholas Fantuzzi, Professor**  
 Alma Mater Studiorum - University of Bologna

Monday, 10th January 2022 12:00-13:30 (GMT +04:00, Dubai)

Zoom link: <https://us06web.zoom.us/j/88454535197?pwd=V1J2SitFZURBMjVzZIE4cFhIUHVmZz09>  
 Meeting ID: 884 5453 5197  
 Passcode: icces

Time	Title	Speaker
------	-------	---------

<b>12:00-12:15</b>	Research on manipulator control based on RGB-D sensor	Xiyuan Wan
<b>12:15-12:30</b>	Love Wave in a Layered Magneto-Electro-Elastic Structure with Flexomagneticity and Micro-Inertia Effect	Olha Hrytsyna
<b>12:30-12:45</b>	Transient Analysis of Micro/Nano Plates by Moving Finite Element Method	Ladislav Sator
<b>12:45-13:00</b>	Meshless computational strategy for higher order strain gradient plate models	Serena Saitta
<b>13:00-13:10</b>	Medical Compound Figure Detection using Inductive Transfer and Ensemble Learning	Mehdi Mehtarizadeh
<b>13:10-13:20</b>	Fully Consistent Formulation of the Collocation Boundary Element Method for Two-Dimensional Strain-Gradient Elasticity Problems and Numerical Implementation Issues for High-Order, Curved Elements	Ney Augusto Dumont
<b>13:20-13:35</b>	Multiscale Finite Element Technique for Mathematical Modelling of Multi-Physics Processes in Heterogeneous Media	E. P. Shurina, N. B.
<b>13:35-13:50</b>	Multilevel Modeling of Woven Composite Shell Structure	Eva Kormanikova
<b>Day 4 – Tuesday, 11th January 2022</b>		
<b>11:00-13:30 UTC/GMT +4 hours General Session 1</b>		
<b>Day 5 – Wednesday, 12th January 2022</b>		
<b>11:00-13:30 UTC/GMT +4 hours General Session 2</b>		

## Invited Speakers

### Plenary Lectures

#### Hydrovoltaics



**Dr. Wanlin GUO**

Dr. Wanlin GUO, academician of Chinese Academy of Sciences, Chair Professor in mechanics and nanoscience, founder and director of the Key Laboratory of Intelligent Nano Materials and Devices of Ministry of Education and the

Institute of Nanoscience of Nanjing University of Aeronautics and Astronautics. His current research focuses on intelligent nano materials and devices, novel conception and technology for efficient energy conversion, molecular physical mechanics for neuronal signaling and molecular biomimics, as well as strength and safety of aircraft and engine. He has published more than 400 peer-reviewed journal papers on Nature series, Phys. Rev. Lett., J. Am. Chem. Soc., Adv. Mater., J. Mech. Phys. Solids, Nano Lett., etc. He received the National Science Foundation of China for Distinguished Young Scholars in 1996 and the honor of Cheung Kong Scholars in 1999. In 2012, he obtained the National Nature Science Prize of China.

***Beam elements and their applications in various fields of structural dynamics***



**Prof. Daigoro Isobe**

Professor Daigoro Isobe received his Ph.D. degree from the University of Tokyo in 1994, and is currently a professor of University of Tsukuba, Japan. He has conducted various researches on collapse behaviors of structures using his original finite element code based upon the ASI-Gauss technique. He is also interested in the field of robotics, and has applied unique approaches to robot control using the essence of computational mechanics. He also works as a Chief investigator of the Facility Simulation Working Group, E-Simulator Development Committee, E-Defense, NIED (National Research Institute for Earth Science and Disaster Resilience), and has succeeded to improve a simulation system using the ASI-Gauss code to analyze motion behaviors of various non-structural components. He has published over 400 journal papers, conference papers, book chapters, and books. One of his recent books is "Progressive Collapse Analysis of Structures: Numerical Codes and Applications" which was published from Elsevier in 2017. He also served as a chairman of several international conferences and workshops such as COMPSAFE 2020 (The 3rd International Conference on Computational Engineering and Science for Safety and Environmental Problems). He received the Ichimura Award upon those achievements in structural collapse analysis field, in 2014, in presence of Princess Akiko of Japan. He also received the Kawai Medal from JSCES (The Japan Society for Computational Engineering and Science) in 2015, and Computational Mechanics Achievements Award from JSME (The Japan Society of Mechanical Engineers) in 2019. He is now a fellow of JSME and the vice-president of JSCES.

**Sequential and Concurrent Multiscale Modeling of 2D Materials from Molecular Dynamics to Continuum Mechanics**



**Prof. James D. Lee**

Professor James D. Lee received his BS, MS, and Ph.D. degrees from National Taiwan University, Rice University, and Princeton Universities in 1964, 1967, and 1971, respectively.

He has been in faculty positions at The George Washington University (1972-1981, 1990-present), West Virginia University (1982), University of Minnesota (1983-1985) in addition to government positions at NIST (1985-1989) and NASA (1989-1990). At GWU, he has been teaching more than 15 different courses, including Continuum Mechanics, Finite Element Analysis, Fracture Mechanics, Nanomechanics, Mechanical Vibration, Optimal Control Theory, Robotics, Ordinary and Partial Differential Equations, Linear Algebra.

He has performed research in diversified research fields including (1) Classical continuum mechanics, (2) Nonlocal theory, (3) Biomechanics, (4) Poroelasticity (tumor growth), (5) 3D/4D printing, (6) Microcontinuum physics (thermomechanical-electromagnetic coupling), (7) Finite element and meshless analyses, (8) Nanomechanics (multiple length-time scale modeling), (9) Fracture mechanics and Fatigue, (10) Optimal control theory (parallel link robotics, structural control for earthquake resistance).

He has received research grants from NSF and Department of Transportation. He is a Fellow of ASME and an Honorary Fellow of the Australian Institute of High Energetic Materials.

He has published about two hundred journal papers, book chapters, and books. The most recently published book, entitled "Advanced Continuum Theories and Finite Element Analyses", consists of four parts: (I) Classical Continuum Mechanics, (II) Microcontinuum Field Theories, (III) Finite Element Analyses, (IV) Special Topics (Nonlocal Theory, Mechanobiology, 4D Printing, Poroelasticity, and Nematic Liquid Crystal).

***Untwisting Twisted Matter***



**Prof. Vijay B. Shenoy**

Professor Vijay Shenoy works on problems in theoretical condensed matter physics exploring notions of topology and entanglement. His contributions include the prediction of the rashbon condensate and topological insulators in amorphous systems.

***Analytical Dynamics and the Control of Nonlinear Systems: New Connections That Provide Explicit***

***Control***



**Prof. Firdaus E. Udwadia**

Firdaus E. Udwadia received his B.Tech degree from the Indian Institute of Technology, and his MS and Ph.D. degrees from the California Institute of Technology, Pasadena. He is Professor of Aerospace and Mechanical Engineering, Civil Engineering and Environmental Engineering, Systems Architecture Engineering, Mathematics, and Information and Operations Management at the University of Southern California, Los Angeles. His main areas of research are Structural and Analytical Dynamics, Applied Mathematics, Structural Control, Computational Methods, Nonlinear Dynamical Systems, Optimization, Systems Engineering, and Collaborative Design.

He is a recipient of the Distinguished Alumnus Award from the Indian Institute of Technology, Mumbai (1982), the Outstanding Technological Innovations Award from NASA (1983), Outstanding Achievement Award from the American



Institute of Aeronautics and Astronautics (2000), Outstanding Technical Contributions Award from the American Society of Civil Engineers (2006), Richard Torrens Award from the American Society of Civil Engineers (2008), and the Thomas Caughey Medal from the American Society of Mechanical Engineers (2018). He is a Life Fellow of the American Society of Mechanical Engineers and the American Institute of Aeronautics and Astronautics.

***Failure and fracture in soft materials and biological tissues***



**Prof. Konstantin Volokh**

Dr. Volokh's expertise lies in mechanics of soft materials and biological tissues with emphasis on modeling failure and fracture. He is author of 100+ journal papers and the Springer monograph, "Mechanics of Soft Materials", now in its second edition. Dr. Volokh is Co-Editor-in-Chief of the journal "Molecular and Cellular Biomechanics," and is founding Editor-in-Chief of the new Springer journal "Mechanics of Soft Materials".

***Modelling and simulation of acoustic and elastic metamaterials***



**Prof. Chuanzeng Zhang**

Chuanzeng Zhang is Professor and Chair of Structural Mechanics, Department of Civil Engineering, School of Science and Technology, University of Siegen, Germany. He received his Diploma (Dipl.-Ing.) in 1983 and his PhD (Dr.-Ing.) in 1986 at Technical University Darmstadt, Germany. From 1986 to 1988, he was postdoctoral fellow with Professor Jan Achenbach at Northwestern University, USA. Before his appointment at the University of Siegen in 2004, he was Associate Professor and Professor at Tongji University, Shanghai, China, and Professor at University of Applied Sciences Zittau/Görlitz, Germany. His research interests include computational mechanics, structural mechanics, fracture and damage mechanics, mechanics of multifunctional materials and structures, acoustic and elastic metamaterials, wave propagation and elastodynamics. He has over 850 publications in scientific journals and conference proceedings. He is Co-Chief Editor of a book series, Associate Editor of three international journals, editorial

member of a book series and over 10 scientific journals. He is Adjunct/Guest/Consulting Professor of 5 universities and China Building Materials Academy, and Honorary Professor of 4 universities. He is honorary doctorate (Dr. h.c.) of Slovak University of Technology in Bratislava, honorary doctorate (Dr.c.) of Aristotle University of Thessaloniki, member of the European Academy of Sciences, member of the European Academy of Sciences and Arts, and member of the Academia Europaea.

## **Semi-plenary Lectures**

### ***Surface tension and how it modifies turbulent flow***



**Prof. Rama Govindarajan**

Research interest: Fluid dynamics

B.Tech. in Chemical Engineering, IIT Delhi.

Ph.D in Aerospace Engineering, IISc Bangalore.

Postdoc, California Institute of Technology.

Tata Institute of Fundamental Research, 2012- present.

Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore 1998-2012.

National Aerospace Laboratories, Bangalore 1988-1998

Fellow of the Indian Academy of Sciences, the Indian National Science Academy and the American Physical Society.

Won the Shanti-Swarup Bhatnagar Prize in 2007.

**Notes on Chemomechanics**



**Prof. Shengping SHEN**

Shengping SHEN, is a professor at School of Aerospace Engineering, Xi'an Jiaotong University. His research interests focus on flexoelectric materials & devices, Chemomechanics, Fatigue & Fracture.

**Multiscale and Multiphysics Modeling of Heterogeneous Materials**



**Prof. Guannan Wang**

Guannan Wang is currently the professor of Civil Engineering at Zhejiang University. He received his M.S. and Ph.D. degrees from Zhejiang University and University of Virginia, respectively. After two-year postdoc research experience with Prof. Satya N. Atluri at Texas Tech University, he started his faculty career at the School of Engineering of Zhejiang University. His research interests are mainly focused on the multiphysics modeling of smart materials and structures; surface effects of micro/nano-composites, as well as mechanics of multiphase media under extreme supergravity condition. His research is funded by the National Natural Science Foundation of China, National Key Research and Development Program of China, etc. He has published almost 50 peer-reviewed publications. Some of his models and programs has already been open-sourced.

**Microwave imaging for breast cancer detection**



Prof. Lulu Wang

Lulu Wang is currently a Distinguished Professor of Biomedical Engineering in the Biomedical Device Innovation Center at Shenzhen Technology University in China. She received the M.E. (First class Hons.) and Ph.D. degrees from the Auckland University of Technology, New Zealand, in 2009 and 2013, respectively. From 2013 to 2015, she was a Research Fellow with the Institute of Biomedical Technologies, Auckland University of Technology, New Zealand. In June 2015, Dr. Wang became an Associate Professor of biomedical engineering with the Hefei University of Technology. In June 2019, she became a Distinguished Professor of Biomedical Engineering at Shenzhen Technology University. Her research interests include medical devices, electromagnetic sensing and imaging, and computational mechanics. Over the past 5 years, Dr. Wang has authored more than 70 peer-reviewed publications, 2 ASME books, 7 book chapters, and 12 issued patents. Dr. Wang is a member of ASME, IEEE, MRSNZ, AAAS, PSNZ, and IPENZ. She is an active reviewer of numerous journals, books and conferences. Dr. Wang has edited four books and two special issues of international journals. She has received multiple National and International Awards from various professional societies and organizations.

**Data-driven based modulus prediction of cancellous bone for defect repair in clinic treatment**



Prof. Zhuo Zhuang

Professor and former Dean, School of Aerospace Engineering, Tsinghua University, Beijing, China. Chief scientist of national fundamental scientific research of China. Ph.D, University College Dublin, Ireland, 1995; Honorary Doctorate Degree (EngD) of Swansea University, UK, 2017. EC member of IACM, EC member of APACM; President of Chinese

Association for Computational Mechanics (CACM); President of Beijing Society of Mechanics; Committee Member of Beijing Association for Science and Technology, China. Published more than 300 papers, 10 books in Chinese and 2 books in English by Elsevier, named: (1) Extended Finite Element Method; (2) Dislocation Mechanism-Based Crystal Plasticity, Theory and Computation at the Micron and Submicron Scale. Given Plenary Lecture at Complas2015 and Complas2019 in Barcelona, Spain; Semi-Plenary Lecture at WCCM2016 in Seoul, Korea and WCCM2020 in Paris, France; Plenary Lecture at CM4P in Porto, Portugal, 2019; Semi-Plenary Lecture at Compsafe2020 in Kobe, Japan.

## **Contributed Session Chairs**

### 1. Computational Methods in Space Flight Mechanics

Tarek A. Elgohary, Dr., Professor,  
University of Central Florida, USA

Xuechuan Wang, Dr., Professor,  
Northwestern Polytechnical University, China

Honghua Dai, Dr., Professor,  
Northwestern Polytechnical University, China

Yue Guan, Dr., Professor,  
Texas Tech University, USA

### 2. Data-driven, physics-based and hybrid modeling & simulation methods for complex engineering systems

Leiting Dong, Dr., Professor,  
Beihang University (BUAA), China

### 3. Symposium in honor of Professor Chein-Shan Liu for his receiving ICCES Lifetime Achievement Award: Novel numerical methods for solving linear and nonlinear algebraic equations

Jiang-Ren Chang, Dr., Professor,  
Department of Systems Engineering and Naval Architecture,  
National Taiwan Ocean University, Taiwan

Honghua Dai, Dr., Professor,  
School of Astronautics,  
Northwestern Polytechnical University, China

Chung-Lun Kuo, Dr.,  
Center of Excellence for the Oceans,  
National Taiwan Ocean University, Taiwan

4. Computational and experimental methods in biomedical and biomechanics engineering

Lulu Wang, Dr., Professor,  
Biomedical Device Innovation Center,  
Shenzhen Technology University, China

5. A Special Symposium on Computational/Experimental Aeroelasticity and Aerothermoelasticity

Dan Xie, Dr., Professor,  
Northwestern Polytechnical University, China

Honghua Dai, Dr., Professor,  
Northwestern Polytechnical University, China

6. Symposium in honor of Professor Padraic O'Donoghue to receive the THH Pian Medal, and Dr. Bud Brust to receive the Eric Reissner Medal

Zhuo Zhuang, Dr., Professor,  
Tsinghua University, China

Hiroshi Okada, Dr., Professor,  
Tokyo Univ. of Science, Japan

Leen Sean, Dr., Professor,  
National University Ireland, Galway, Ireland

Dongfeng Li, Dr., Professor,  
Harbin Institute of Technology (Shenzhen), China

Hiroshi Kawai, Dr., Professor,  
Toyo University, Japan

7. Symposium on Advances in Virtual Testing, Simulations and Predictive Methods in Creep, Fatigue, and Environmental Cracking

Kamran Nikbin, Professor,  
'Structural Integrity'-Royal Academy of Engineering Chair, Head of Structural Integrity Centre

8. Advances in Modelling, Simulation and Control of Cyber-Physical Systems

Ayman Aljarbough, Assistant Professor,  
University of Central Asia

9. Railway Infrastructures

Diogo Ribeiro, Dr., Professor,  
ISEP, Instituto Superior de Engenharia do Porto

Pedro Aires Montenegro, Dr.,  
FEUP, Universidade do Porto

Andréas Andersson, Dr.,  
KTH, Royal Institute of Technology, Stockholm

Maria D. Martinez-Rodrigo, Dr., Professor,  
UJI, Universitat Jaume I, Castellón

10. Traumatic injury subjected to Impact, Blast and Ballistics

Linxia Gu, Dr., Professor  
Florida Tech, USA

James D. Lee, Dr., Professor  
The George Washington University, USA

11. Advanced Computational Methods for Gradient and Nonlocal theories for Multidisciplinary and Multiphysics Problems

Jan Sladek, Dr., Professor  
Institute of Construction and Architecture,  
Slovak Academy of Sciences, 84503 Bratislava, Slovakia

12. Image Processing and Analysis

João Manuel R. S. Tavares, Dr., Professor  
Faculdade de Engenharia da Universidade do Porto, Porto, Portugal

Renato M. Natal Jorge, Dr., Professor  
Faculdade de Engenharia da Universidade do Porto, Porto, Portugal

Yongjie (Jessica) Zhang, Dr., Professor  
Department of Mechanical Engineering,  
Carnegie Mellon University, Pittsburgh, USA

13. Modeling the micromechanical deformation behavior of multi-phase materials

Faisal Qayyum, Dr., Professor,

M.Sc.-Ing. Faisal Qayyum Doktorand TU Bergakademie Freiberg Institut für Metallformung Bernhard von Cotta-Str. 4  
09599 Freiberg, Germany

14. Computational, Experimental Engineering, and Science in Digital Twins  
Zhihan Lv, Associate Professor,  
Qingdao University, China

15. Multiscale and Multiphysics Modeling of Heterogeneous Media  
Guannan Wang, Professor,  
Zhejiang University, China

16. Computational & Experimental Fluid/Electromagnetic Dynamics and Other Applications  
Kazuhiko Kakuda, Dr., Professor  
Department of Mathematical Information Engng.,  
College of Industrial Technology,  
Nihon University, Japan.

Soichiro Ikuno, Dr., Professor  
School of Computer Science,  
Tokyo University of Technology, Japan.

Susumu Nakata, Dr., Professor  
Department of Media Technology,  
College of Information Science and Engineering,  
Ritsumeikan University, Japan.

Hiroshi Yamasaki, Dr., Professor  
Department of Sustainable Engineering,  
College of Industrial Technology,  
Nihon University, Japan.

Masakazu Furuichi, Dr., Professor  
Department of Mathematical Information Engng.,  
College of Industrial Technology,  
Nihon University, Japan.

Kazuhito Misaji, Dr., Professor  
Department of Mathematical Information Engng.,  
College of Industrial Technology,  
Nihon University, Japan.

Jun Toyotani, Dr., Professor  
Department of Industrial Engineering and Management,  
College of Industrial Technology,  
Nihon University, Japan.



Taku Itoh, Dr.

Department of Mathematical Information Engng.,

College of Industrial Technology,

Nihon University, Japan.

Ayumi Takahashi, Dr.

Department of Mathematical Information Engng.,

College of Industrial Technology, Nihon University, Japan.

Shinichiro Miura, Dr., Professor

Department of Liberal Arts and Basic Sciences,

College of Industrial Technology, Nihon University, Japan.

## **Contact**

### **ICCES Secretariat**

Tel: +1 702 673 0457

Fax: +1 844 635 2598

Email: [icces@techscience.com](mailto:icces@techscience.com)

Join ICCES community on **Slack** — it's a faster, simpler way to work and communicate.

Sign up here, from any device:

[https://join.slack.com/t/techscience-workspace/shared\\_invite/zt-jywij4qe-xjsBcjZv\\_7mE858D0eg2yw](https://join.slack.com/t/techscience-workspace/shared_invite/zt-jywij4qe-xjsBcjZv_7mE858D0eg2yw)

**INTERNATIONAL CONFERENCE ON  
COMPUTATIONAL & EXPERIMENTAL  
ENGINEERING AND SCIENCES**