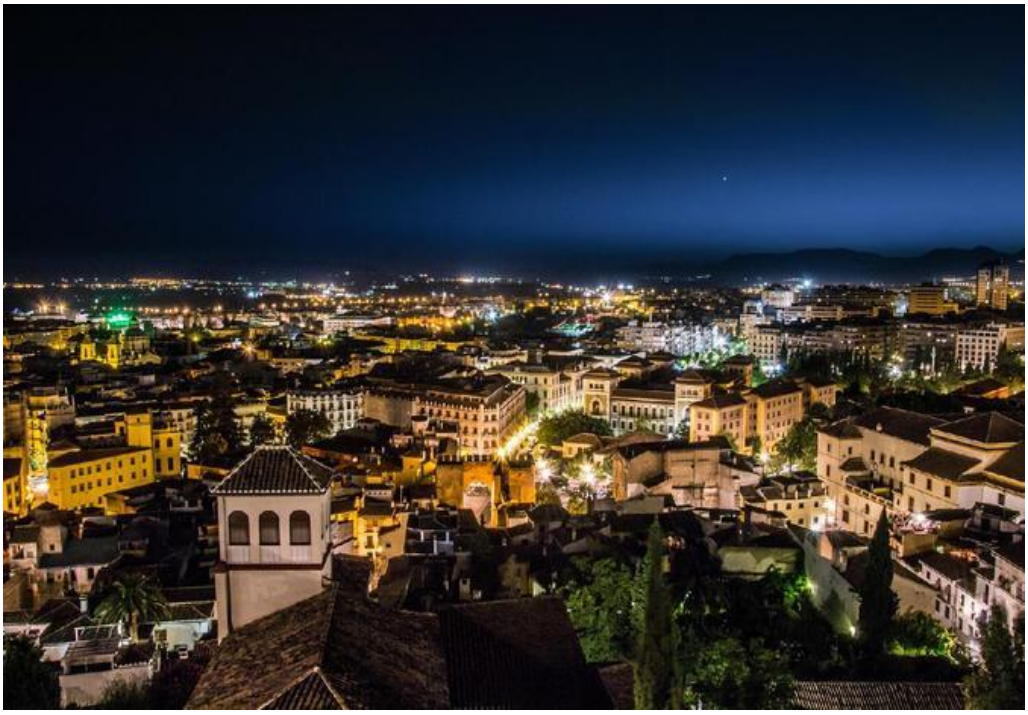


ICCE-28 July 20-26, 2025 in Madrid Spain

28th International Conference in Composites/Artificial Intelligence/Nano Engineering, Madrid, Spain

Co-sponsors ICCE and Universidad Poltecnica Madrid

This web is being continually updated

EXCITING NEW TOPICS:

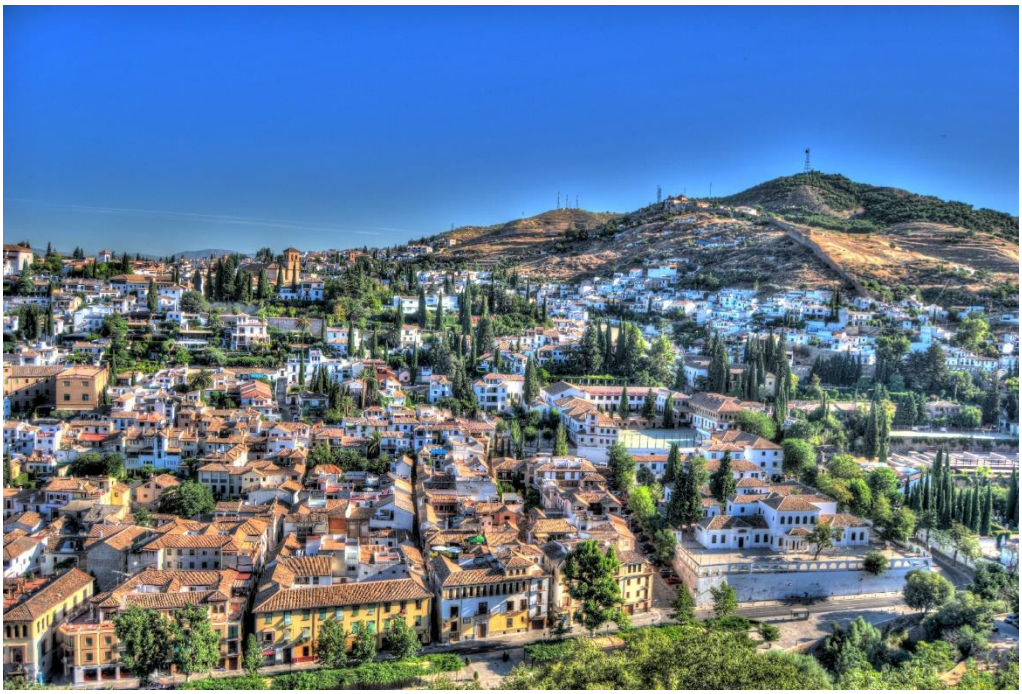
Artificial Intelligence

Deep Learning

Bio-inspired Nano Composites

Energy Nano Composites

Lightweight Engineering Composite Structures



HOT TOPICS:

Artificial Intelligence, Bio-medicine, Bio-Nano, Energy-Nano, Energy Storage & Conversion, Carbon Sci.Tech.,3-D printing,.materials under Harsh Environments, Green materials, .Hybrid & Multifunctional Materials, many others

TRADITIONAL TOPICS:

all areas of materials science, all areas of Mechanics and Physics of Solids & Structures, manufacturing, mathematical modeling, infrastructures composites, oxides, physics, chemistry, biology of composites, computational materials, smart materials & sensors, the above is only a few out of many others not listed here.

Interested participant should ubmit tentative (subject to change) paper title immediately to Professor David Hui dhui@uno.edu followed by "detailed" one-page colorful graphical abstract

World renowned keynote speakers will be in the updated web

CONTACT US

Professor David Hui (Conference Chair)

dhui@uno.edu

wechat davidhui2017year

From webofscience, David Hui has H index=83, average citations per published paper =73

The list of all over 500 published papers in journals by David Hui is shown below

https://scholargps.com/scholars/88016712763346/david-hui

https://www.scopus.com/authid/detail.uri?authorId=56399017900

Hui from webofscience.com H index = 83

Hui from scopus.com H index = 90

ICCE participants are encouraged to expand the graphical abstracts to full-length paper, to be submitted to any journals of their choices. The following are the suggested journals (the journals on Artificial Intelligence to be included soon) :

These are the composites or mechanics or nano journals (D. Hui serves on the editiorial board)

Applied Composite Materials https://link.springer.com/journal/10443/editorial-board

International Journal of Mechanical Sciences https://www.sciencedirect.com/journal/international-journal-of-mechanical-sciences/about/editorial-board

Journal of Computational and Theoretical Nanoscience http://www.aspbs.com/ctn/

Journal of the Mechanical Behavior of Materials https://www.degruyter.com/journal/key/jmbm/html#editorial

Materials and Design https://www.sciencedirect.com/journal/materials-and-design/about/editorial-board

Multidiscipline Modeling in Materials and Structures https://www.emeraldgrouppublishing.com/journal/mmms

Nanotechnology Reviews https://www.degruyter.com/journal/key/ntrev/html

Nonlinear Engineering https://www.degruyter.com/journal/key/nleng/html#editorial

Reviews on Advanced Materials Science https://www.degruyter.com/journal/key/rams/html

Sains Malaysiana https://www.ukm.my/jsm/editorial%20board.html

Transactions of FAMENA https://famena.fsb.hr/editorial/

World Journal of Engineering https://www.emeraldgrouppublishing.com/journal/wje

Other journals of interests

Journal of Mining and Metallurgy section B-Metallurgy,

A list of Ai journals will be included

WHY SPAIN?

https://images.search.yahoo.com/yhs/search;_ylt=AwrihPPJ20tnbecuZJwPxQt.;_ylu=Y29sbwNiZjEEcG9zAzEEdnRpZAMEc2VjA3Nj?p=heritage+sites+of+spain&type=type9099612-spa-3503-84593&param1=3503&param2=84593&hsimp=yhs-001&hspart=mnet&ei=UTF-8&fr=yhs-mnet-001

the above are well over 100 beautiful touristic photos of Spain.

https://en.wikipedia.org/wiki/List_of_World_Heritage_Sites_in_Spain#:~:text=As%20of%202024%2C%20Spain%20has%2050%20total%20sites,China%20%2859%29%2C%20Germany%20%2854%29%2C%20and%20France%20%2853%29.%20%5B5%5D

the above shows the 50 heritage sites by UNESCO, Spain ranks 5th among the country with the most UNESCO heritage cites.

https://www.madridsensations.com/unesco-sites-close-to-madrid/

the above shows 6 UNESCO heritage cites close to Madrid

The Spanish culture, and the flamenco dance and Spanish cuisine, Ham and coffee are world famous

ICCE-28 TOPICS

The following is just a small list of the covered topics to be included

in ICCE-28, July 20-26, 2025 Madrid, Spain

there are many other topics, especially Artificial Intelligence not included here this web is constantly updated

Deformation and Mechanical Properties of Composite Materials and Structures

Composite materials and structures have been extensively used in a variety of industrial fields due to their excellent performances. Their deformation characteristics and mechanical properties are of great importance for evaluating the effects of strengthening, toughening and optimal design. This session welcomes up-to-date research and review presentations about techniques and applications in measuring deformation and evaluating mechanical properties of composite materials and structures. Expected topics include but are not limited to:

1) Evaluations of deformation, mechanical properties, instability and failure behaviors (including delamination, buckling, crack) under different mechanical loads, electrical loads, thermal loads, magnetic loads, coupling loads, etc.

2) Applications in various composite materials and structures, such as reinforced plastics, metal composites, ceramic composites, composite building materials, micro/ nano materials, laminated materials, film/substrate structures, semiconductor composite structures.

3) Non-destructive deformation measurement techniques and apparatus, such as moiré methods, the digital image correlation method, laser or holographic interferometry, electronic speckle pattern interferometry, geometric phase analysis, the grid method, the virtual fields method, etc.

A Symposium on Biomedical Application of Nano-Materials and Composites In ICCE-26

Although nanoparticle preparation technology have been developed dramatically in last 20 years from the aspects of chemistry and material science, the translation of these developed technology particularly with an orientation of biomedical application has to face the interdisciplinary challenges crossing the boundaries of chemistry, material sciences and engineering, pharmaceutics and biomedical sciences. The major aim of the proposed symposium is to promote scientific communication and dialogue between purely material-based researches and technology-driven translational activates. Such symposium would also allow to facilities further discussion on translational challenges faced from both the scientific and the regulator aspects and on future research directions of developing novel nano-composites as enabling tools for the emerging stem cell biotechnology or potential biomedical products for diagnose and treatment. The scope of the symposium will cover the following aspects:

- Improvement of mechanical properties, biological response and functionality
- Delivery of drug, genes and stem cells
- Enabling tool for biotechnology
- Safety of nanomaterials and its composites

An Introduction of the "Porous Metals and Sandwich Structures"

Ultra-light, highly porous metallic materials (foams, honeycombs and lattices) have positive combinations of physical and mechanical properties, such as high specific stiffness and strength, good energy absorption capacity and high gas permeability, as well as high thermal conductivity. They are therefore of much current academic and industrial interest, expecting the more and more widely uses in many important fields. Common uses of porous metals include light weight cores for sandwich structures to enhance the load-carrying capability. A typical sandwich structure consists of two thin metallic/composite face-sheets, with a softer crushable porous core between them. The advantages of these sandwich structures relative to the corresponding solid monolithic counterparts of equivalent mass have been demonstrated. This symposium is aimed to provide an international forum for academia and practitioners to share the leading edge scientific knowledge in the related areas. It will update the latest progress of porous metals and sandwich structures covering the preparation, characterization and applications; quasi-static and dynamic response; and experimental, theoretical and simulation aspects.

Polymer Composites and Nanocomposites

Polymer composites and nanocomposites are materials in which a polymer matrix is filled with organic or inorganic fillers in the forms of fibers, platelets, or particulates. Such heterogeneous material systems have properties that cannot be achieved by either of the constituent materials alone. They become more and more important because their multifunctional properties and performance can be tuned and optimized using novel micro-and-nanostructuring techniques. As a result, these versatile material systems are used in a wide range of applications in diverse fields including automotive, aerospace, biomedical, construction, electronics, energy, and packaging. This symposium intends to be a forum for researchers to disseminate the state-of-the-art research and review presentations on the design and fabrication of novel polymer composites and nanocomposites. Topics of interest include but not limited to

(i) processing-structure-properties relationship

(ii) smart and multifunctional properties;

(iii) energy harvesting and energy storage; and

(iv)nano-processing.

Retrofit of Concrete and Masonry Structures

Externally Applied Composites are widely used in Infrastructure, in Repair and Strengthening of Concrete and Masonry Structures. Authors are encouraged to submit 2-page papers related to the use of composites and other advanced materials and concepts in Retrofit of Concrete and Masonry Structures. Already published papers discuss critical unresolved issues on assessment, modeling, analyses and design of existing structures before and after Composites application. Strengthening and repair of structures under extreme seismic or extreme service loading or harsh environmental conditions, structures that are suffering fatigue, steel corrosion or seismic damages and assessment of residual life of damaged and ageing infrastructure. Retrofit of structures with innovative concepts, composites and other advanced, eco-friendly, biomaterials, hybrid materials, 3D printed materials, and nanomaterials. Utilization of advanced 3D finite element analyses in innovative design and application of composites in construction. Standardization of tests and advanced design of retrofits. Various other areas of applications are covered.

Rational: Retrofit of Concrete and Masonry Structures session is developed within the ICCE broader concept that emphasizes the "D.I.M." approaches to science and engineering (DURABILITY approach to structures, INTERDISCIPLINARY approach to science, and MULTIFUNCTIONAL approach to materials). It aims to bridge the gaps between infrastructures, aerospace technology, bio-materials and nanotechnology among others. The goal is to ENCOURAGE LEVERAGING of composite materials research resources through joint research between participants and writing joint research proposals.

FRP Composites for Civil Infrastructure Applications

Fiber reinforced polymer (FRP) composites are promoted as the new construction materials to be used in civil infrastructure due to their superior corrosion resistance and high strength-to-weight ratio, including structural shapes, bridge decks, internal reinforcements and externally bonded reinforcements. This session intends to be a forum for researchers to disseminate the state-of-the-art researches and developments on the design and fabrication of FRP composites for civil Infrastructure applications. Topics of interest include but not limited to (i) FRP strengthening of RC/steel structures; (ii) innovative uses of FRP composites; (iii) durability, material performance, inspection and quality assurance; and (iv) performance under seismic, dynamic and impact loading.

Novel 3D Printing of Composites

3D printing or additive manufacturing is a process of making three dimensional solid objects from a digital file. The creation of a 3D printed composites is achieved using additive processes. In an additive process an object is created by laying down successive layers of material until the object is created. 3D printing enables you to produce complex composites using different materials at a time and fabricate more complex structures and spatial architectures than traditional methods. 3D printing has many successful applications in aerospace, construction engineering and biomedical engineering. Novel 3D printing of composites topic focuses on any cutting-edge research regarding the use of composites or hybrid materials as building blocks to fabricate industrial or biological products.

Molecular Dynamics Simulations

Molecular dynamics (MD) is a computer simulation method for studying the physical movements of atoms and molecules. The atoms and molecules are allowed to interact for a fixed period of time, giving a view of the dynamic evolution of the system. In general, the trajectories of atoms and molecules are determined by numerically solving Newton's equations of motion for a system of interacting particles, where forces between the particles and their potential energies are often calculated using interatomic potentials or molecular mechanics force fields. MD

simulations gain popularity in materials science and engineering. This symposium intends to be a forum for researchers to exchange and share their experiences and research results on all aspects of molecular dynamics simulations and their applications in composite material system. It also provides a premier interdisciplinary platform for researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns in the fields of molecular dynamics simulations.

Homogenization

Homogenization is comprised of a large set of techniques for predicting the response of heterogeneous materials based on the properties and arrangement of the individual phases. These techniques range from classical micromechanics approaches to rigorous mathematical homogenization theories. They play an indispensable role in the development and design of advanced materials, including traditional composites, functionally graded, multifunctional, nano and smart materials, amongst others, for use in diverse applications. Development of these materials is accelerated by novel homogenization-based computational techniques that make transparent the connection between operative deformation and failure mechanisms at different material scales on the overall response. This symposium provides a platform for engineers and scientists to share ideas and present latest resultson the development and application of different homogenization approaches ,including finite-element, finite-volume, transform and elasticity-based techniques, in stand-alone as well as multi-scale applications ranging from nanotechnology to medicine.

Cryogenically Conditioned High Performance Fibers

High performance fibers has been extensively used in the fields of aerospace, military, marine or mountaineering etc, due to its good mechanical properties, thermal stabilities and energy absorption properties. The high

performance fiber reinforced composites need to withstand large cyclic temperature variations and extremely low temperatures. Therefore, the PAN based carbon fiber, CNT fiber and Kevlar fiber were cryogenically conditioned both through a low cooling rate and a quench rate to explore the effects of cryogenic treatments on properties and micro-structures. Different cryogenic processes will results in different consequences to the high performance fibers. Generally, their interfacial bonding with matrix could be enhanced due to the change of the surface morphology and huge hoop stress induced by the cryogenic temperature. In addition, Kevlar fiber after proper cryogenic process will possesses higher tensile strength or abrasion property. (Figures showed abrasion fractures of Kevlar fibers).

***References: Composites Part B: Engineering (2017) 116, 398-405; Composites Part B: Engineering (2017) 125,195-202; Composites Part B: Engineering (2016) 99, 358-365; Composites Part B: Engineering (2016)105, 132-137*.**

Multifunctional Carbon Nanotube Yarns with Core-sheath Structure

Flexible strain sensors are needed in the development of flexible electronic systems of the future for many applications including the monitoring of human motion and physiological parameters as well as in therapeutics and entertainment. In addition to the ability to sense, essential characteristics of these devices are mechanical compatibility with the system (e.g. textile products), environmental stability, and robustness over repeated uses. To this end, carbon nanotube/polyvinyl alcohol (CNT/PVA) coated yarn with core-sheath structure (inner pure CNT core and outer CNT-PVA sheath, as shown in figure) was fabricated. The CNT/PVA coated yarn can possess an good electrical conductivity of 447.1 S/cm, better mechanical properties and exhibits linear piezoresistive response, showing its improved mechanical compatibility with the system (e.g. textile products). In addition, by adjusting the molecular weight of the PVA, a yarn-like switch-type humidity sensing material could be obtained. The electrical resistance of the virgin humidity sensing material remains almost constant at low relative humidity (RH), and then increases sharply as the RH increases above 75%, showing a good humidity switch characteristic.

***References: Materials Letters, (2016)183, 117-121; Sensors and Actuators, B: Chemical, (2016) 230, 528-535; Composites part A, (2018) Accepted; Composites Part A. (2016) 88, 98-105*.**

Gelclad-Aerogel and Nano-technology enhanced construction composite materials

Biopolymers are gaining increasing attentions as a matrix for natural fibre reinforced composites. Bio-based composites can have great potentials in both the construction industry as alternatives to currently adopted petrochemical counterparts, especially with the current mandate to use environmentally friendly and sustainable materials. The worldwide production of biopolymers/bioplastics is also on the rise which gives research a greater variety and opportunity to tailor composites for intended application and requirements. Applying nanotechnologies in the construction industry is also on the rise as it allows for lighter and stronger nanocomposites to be produced with enhanced properties such as lower thermal conductivity and lower flammability.

This symposium is developed in connection with EU funded GELCLADproject within the ICCE broader concept that focuses on biopolymers and nanotechnology enhanced construction composites. The scope of the symposium will cover the following aspects:

1) Biopolymer/Bioplastics based construction materials

2) Nano-technology enhanced biocomposites

3) Co-extrusion of multi-functional composites

4) Novel insulation materials/systems

5) 3D printing biopolymer composites

The GELCLAD project which has received funding from the European Union's Horizon 2020 research and innovation programme offers an innovative solution by combing biopolymers with nanotechnologies to produce an advanced and novel cladding system , based on a single multi- meso-structured panel with excellent insulation properties, made from functional bio-polymers , bio-fibres and aerogel to prepare a sustainable, lightweight, and a waterproof ecoWPC frame, while also implementing an advanced foamable extrudable aerogel (FEA) as an insulation core/layer to reduce the thermal transfer rate and the overall flammability of the cladding system.