ICCE-28 July 20-26, 2025 in Chengdu, China

28th International Conference in Composites/Artificial Intelligence/Nano Engineering, Chengdu, China

Sponsor: ICCE

Co-sponsor Chengdu University of Technology, Southwest Jiaotong University

This web is being continually updated

EXCITING NEW TOPICS:

In additional to the usual topics of Engineering Science and Mechanics in ICCE, we have additional NEW topics:

Artificial Intelligence

Deep Learning

Bio-Inspired Nano Composites, Medicine and Dentistry

Energy Conversion and Conservation, Nano-Energy

Electric Vehicles and Engineering Safety

Green Engineering, Toxicity, Sensors, Waste Management

Solar and Wind Energy,

Ocean and Arctic Engineering

Robotics and Automation

Manufacturing and 3D and 4D printing

Message from ICCE co-Chairman of Scientific Committee

The ICCE conference is unique in that while it is an engineering conference, it has attracted numerous chemists, physicists and biologists scientists from diverse fields in our efforts to promote interdisciplinary research on composites. Of particular concern is the challenge for materials engineers to understand the wide diversity of length scales ranging from nano to micro to macro and full scale and to question the validity of the theories or models which are known to be valid only in certain length scales.

The ICCE conference will provide a forum for the exchange of information and ideas in virtually all areas Engineering Science and Mechanics research with the unifying concepts of Composite Materials, Artificial Intelligence (Ai), and NanoEngineering.

The goals of the ICCE conference are:

1. The conference aims to solve or partially SOLVE CRITICAL UNRESOLVED ISSUES of our everyday lives. The methodologies involve the three pillars in COMPOSITES or NANOENGINEERING, namely, Mechanics, Manufacturing, and Materials, in all length scales.

With the aid of ARTIFICIAL INTELLIGENCE, a wide mirage of previously unsolvable problems can be solved with minimal effort, and much better accuracy. A few examples of difficult-to-solve problems are Climatic change, medical breakthroughs, life predictions of structures, … Research to improve Artificial Intelligence research will be emphasized.

2. Many breakthrough innovative research arise from INTERDISCIPLINARY science and engineering approaches. Thus, you will find many chemists and engineers in this conference, a pleasant situation since these two groups traditionally attend separate conferences. We are in the age of the Artificial Intelligence (Ai) revolution and many people agree it will be even far more dramatic than the Nano revolution. The ICCE conference aims to bridge the gaps between aerospace technology, biomaterials, chemistry, construction technology, environmental technology, electronics, energy, fluid mechanics, infrastructures, marine industries, magnetic materials, metallurgy, nanotechnology,
pharmacy, photonics, physics, powder metallurgy, sensors/actuators, to name a few.

3. The goal is to encourage the LEVERAGING of composite materials, Artificial Intelligence, and nano research resources through joint research papers between participants and writing joint research proposals.

Professor David Hui

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:

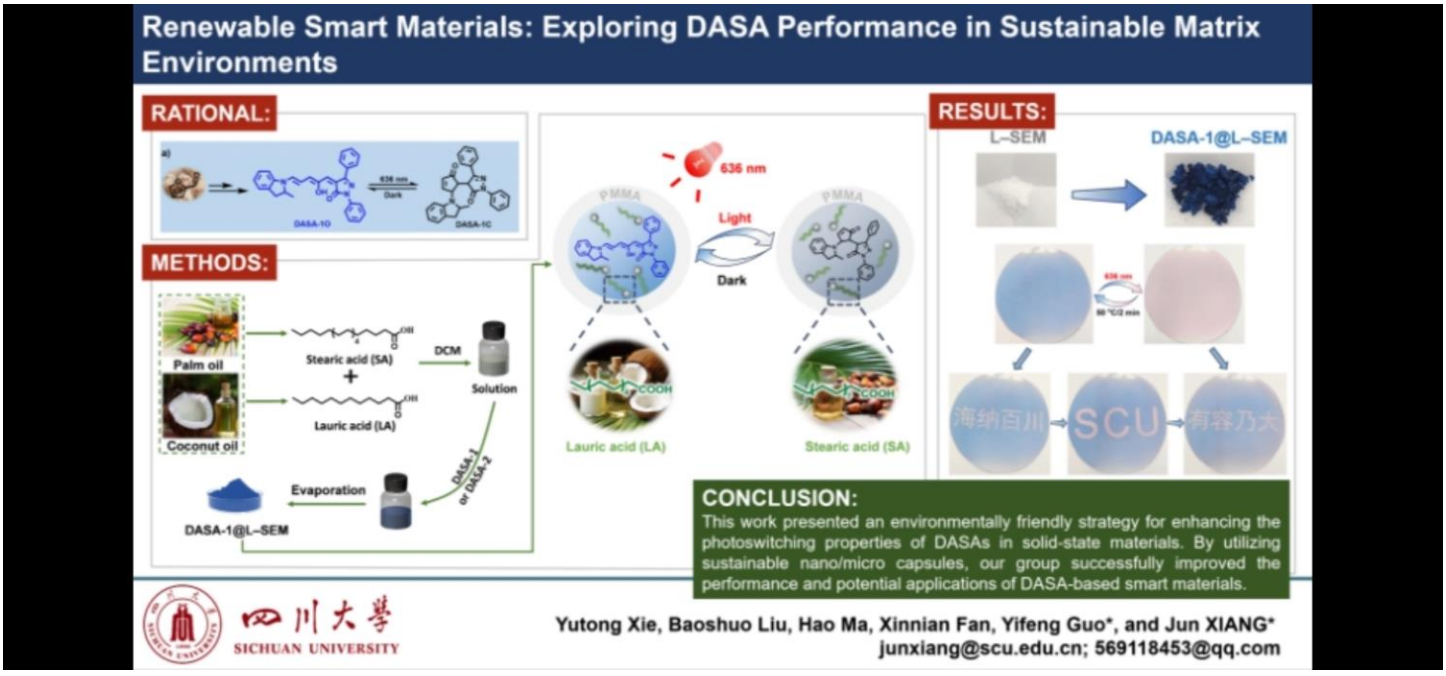
all areas of materials science, all areas of Artificial Intelligence, Deep Learning, Mechanics and Physics of Solids & Structures, manufacturing, mathematical modeling, infrastructures composites, oxides, physics, chemistry, biology of composites, computational materials, smart materials & sensors, the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

Interested participants should submit a tentative (subject to change) paper title immediately to Professor David Hui dhui@uno.edu followed by a "very-detailed" one-page colorful self-explanatory graphical abstract. Sample graphical abstract are shown below.

World renowned keynote speakers will be in the updated web

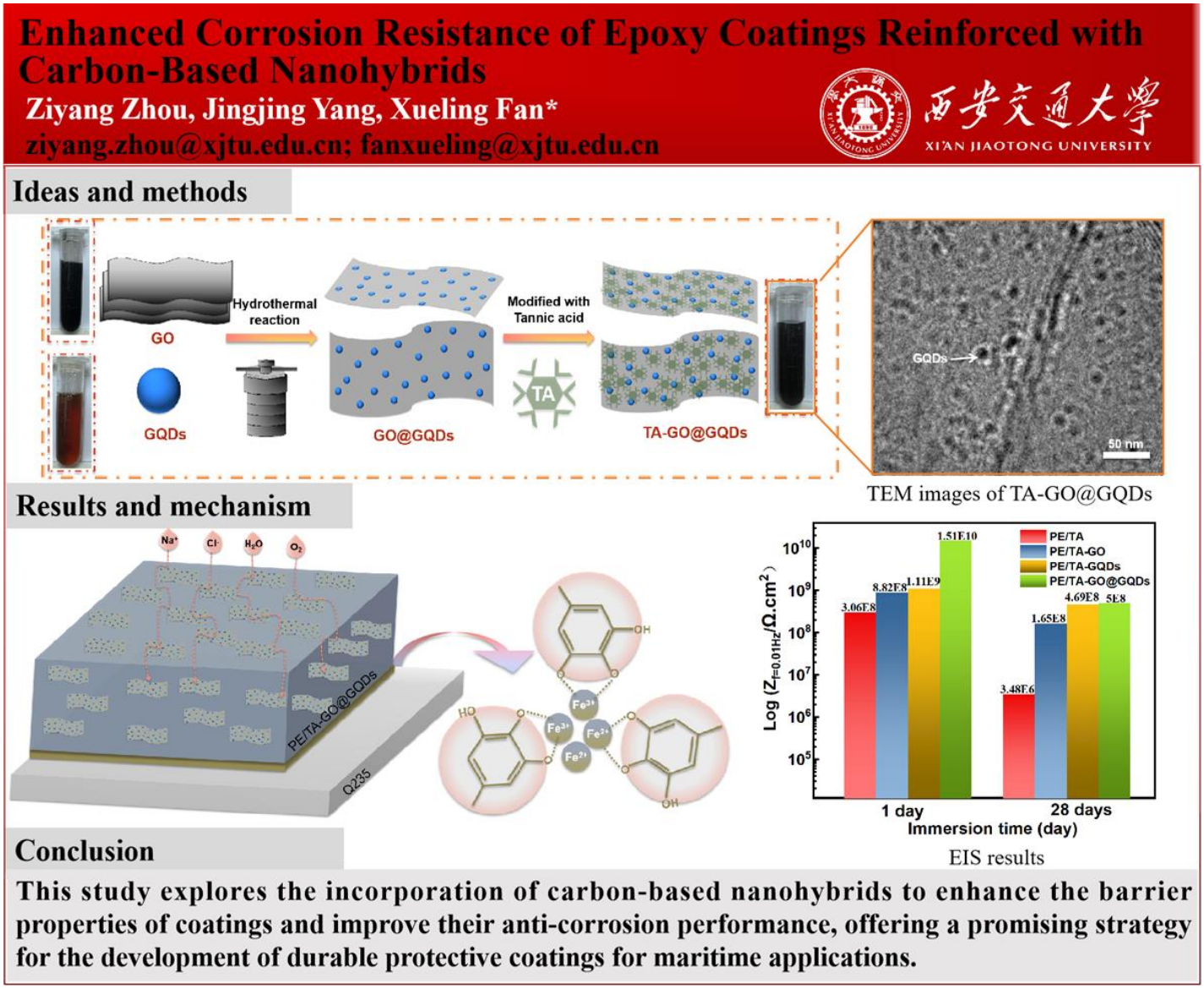
Sample detailed graphical abstracts are shown below, of course, all abstracts are different because the paper topics are different. Feel free to use your artistic talent to make the graphical abstract as detailed as possible, to be read within a couple of minutes. **Beginner readers** will "easily" understand the complicated subject and will be enticed to do more research on this topic, and **advanced readers** will not be bored and will learn a lot too, because the graphical abstract involves very advanced science.

Sample SELF-EXPLANATORY graphical abstracts consisting of Rationale, Methods, Results, and Conclusions



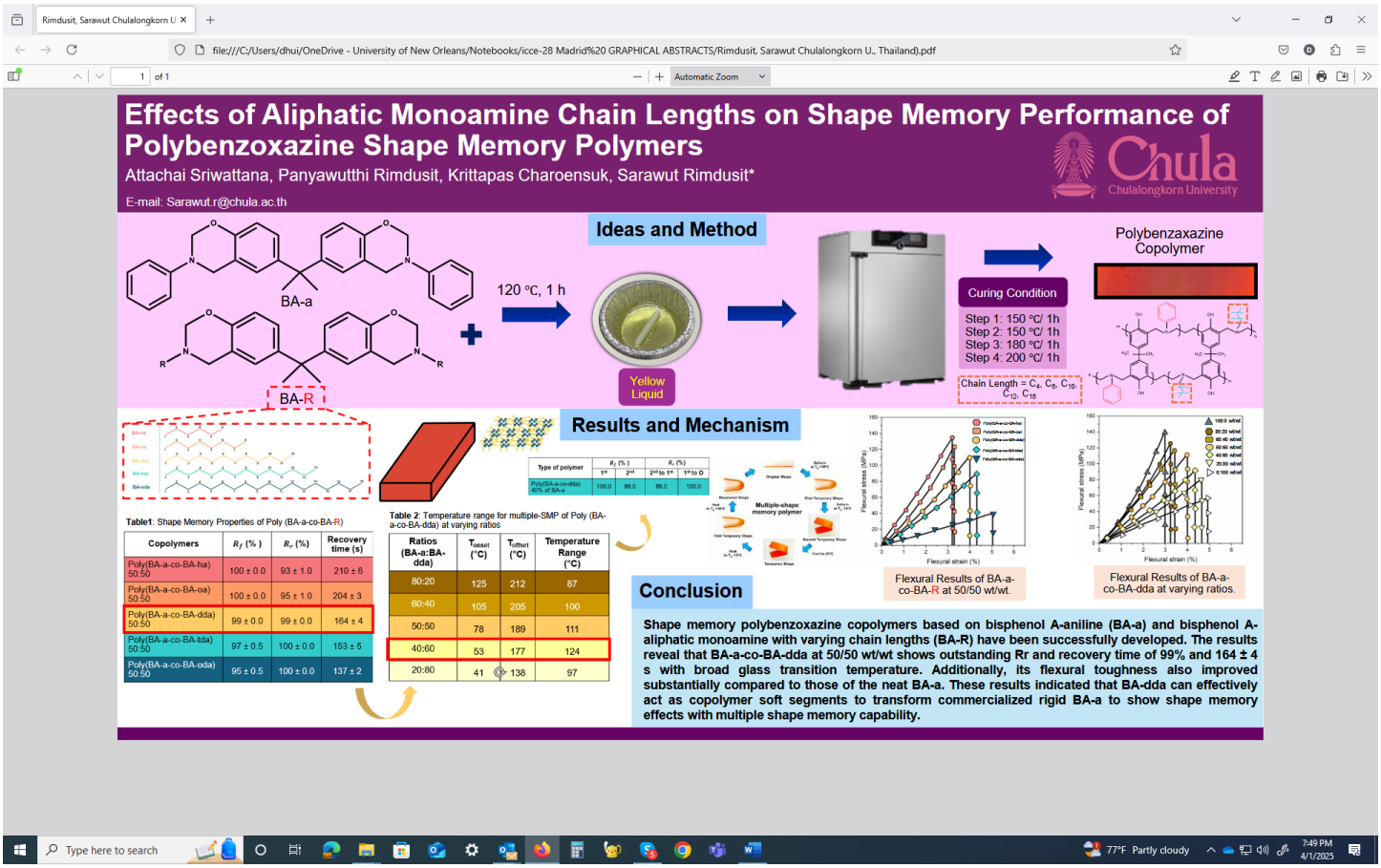
If you wish, in addition to a graphical abstract, you can and should also provide a one-paragraph abstract to show additional details.

Sample SELF-EXPLANATORY graphical abstracts consisting of Rationale, Methods, Results, and Conclusions



If you wish, in addition to a graphical abstract, you can and should also provide a one-paragraph abstract to show additional details.

Sample SELF-EXPLANATORY graphical abstracts consisting of Rationale, Methods, Results, and Conclusions



CONTACT US

Professor David Hui (ICCE-28 Chair) dhui@uno.edu

wechat davidhui2017year

from webofscience, David Hui has H index=84, average citations per published paper =76 over 4000 citations per year in each of the last five years

from scopus David Hui has H index = 91

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

from scholargps.com based on the past five years' publications and citations, Hui ranks 1st in the world in Nanotechnology out of 74,000 researchers in this critical research field

https://scholargps.com/highly-ranked-scholars?year=2024&ranking_duration=LAST_5_YEARS&specialty=Nanotechnology&p=1#1

PUBLICATIONS of presented papers

ICCE participants are encouraged to expand the extended graphical abstracts to full-length papers, to be submitted to any journals of their choices.

Please note that the registration fee does NOT include the open-access publication charge.

The following are the suggested journals.

These are the ICCE suggested journals (D. Hui serves on the editorial boards)

A list of Artificial Intelligence journals will be included soon

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 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

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

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

Technical Gazette https://www.tehnicki-vjesnik.com/#!/articles/EN/e8f5bed7-dcb0-4b79-921b-c4c3e135702e

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

Other suggested journals

Advanced Manufacturing and Material Processing (AMMP)

Composites and Nanostructures

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

Journal of Vibroengineering https://www.extrica.com/journal/jve

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

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

Journal of Mining and Metallurgy section B-Metallurgy

WHY Chengdu, China?

Chengdu Temperate is relatively moderate all year in China

1. Wide and Narrow Alley

" in Chengdu, I prefer nighttime, but daytime is great too, I have been there

too many times, still not tired of it. This Alley was built during the Qing dynasty, and a must-visit place.

https://www.youtube.com/watch?v=hwh4NO5hDc4

https://www.youtube.com/watch?v=BLTxV11P6do

feel free to enjoy the above videos

My favorite sites for dining and shopping in Chengdu is, the world-famous

2. PANDA ZOO

The city of Chengdu is world-renowned and is known as the hometown of Pandas

Baby-pandas so cute

https://www.youtube.com/watch?v=izxkKkG3kzI

big pandas so gorgeous

https://www.youtube.com/watch?v=6bVOTE4Vx1E

3. Jinsha Museum

https://www.youtube.com/watch?app=desktop&v=6wqNMoan9Lg

showing the long history of Chengdu

many others tourists sites in Chengdu, too long to be shown here

4. Dujiangyan, irrigation system and scenic place

https://chengdudeeptour.com/dujiangyan-scenic-area-the-oldest-irrigation-system-in-the-world/

UNESCO World Heritage Site:

Jiuzhaigou National Park UNESCO world Heritage site

https://www.chinaairlinetravel.com/trains/chengdu-to-jiuzhaigou-huanglong/

This park is known for its spectacular mountain scene with crystal-clear see-through water

as seen on the above website (feel free to copy the above web and paste)

How to go from Chengdu to Jiuzhaigou National Park, using high-speed trains

https://www.audleytravel.com/us/china/places-to-go/jiuzhaigou?infinity=ict2~net~gaw~cmp~710303207~ag~1245747976905507~ar~~kw~%2Fus%2Fchina%2Fplaces-to-go~mt~b~acr~2569645010&audcmp=710303207&audadg=1245747976905507&audkey=%2Fus%2Fchina%2Fplaces-to-go&auddev=c&audadid=&audpos=&audtrgt=dat-2329658981088879:loc-190&audtel=ppcnb&audnet=o&msclkid=21f4f4081f991327b4c193e469921681&utm_source=bing&utm_medium=cpc&utm_campaign=ASIA%20-%20NCA%20-%20China&utm_term=%2Fus%2Fchina%2Fplaces-to-go&utm_content=China%20-%20DSA%20-%20Places

of course, tourists can save money by buying their own high-speed train ticket without joining tourist groups

there are seven other UNESCO World Heritage Sites in Sichuan province

i) Jiuzhai Valley National Park

ii) Leshan Giant Buddha

iii) Emei Mountain

iv) Dujiangyan Irrigation System

v) Qingcheng Shan

vi) Huanglong

vii) Sichuan Giant Panda Sanctuaries

Will post more tourists information on-site, depending on demands

ICCE-28 TOPICS

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

in ICCE-28, July 20-26, 2025 Chengdu, China

there are many other topics, especially Artificial Intelligence not included here

this web is constantly updated

Artificial Intelligence

all areas of Ai, Deep learning, including agents and multi-agent systems, automated reasoning, constraint processing and search, knowledge representation, machine learning, natural language, planning and scheduling, robotics and vision, and probability uncertainty in AI and statistics and mathematical modeling.

We welcome papers on the discovery and design of new materials and elements of physics, chemistry and biology, medicine, to understand and manipulate the properties of matter, aiming to develop materials that meet specific criteria of strength, durability, weight, conductivity, reactivity.

All applications of Ai are welcomed, electric power, energy, control theory, power electronics, renewable energy, photovoltaics, sustainable energy, renewable energy, topology, performance appraisal, inelastic electron, psychology, business, rational philosophy, civil, mechanical, chemical, petroleum, naval architecture and marine engineering, among others.

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

Although nanoparticle preparation technology has been developed dramatically in the last 20 years from the aspects of chemistry and material science, the translation of this 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 research and technology-driven translational activities. A 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 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 more and more widely used in many important fields. Common uses of porous metals include lightweight 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 state-of-the-art research and review presentations on the design and fabrication of novel polymer composites and nanocomposites. Topics of interest include but are 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, 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 the 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 aging 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, 4DPrinting of Composites

3D or 4D printing or additive manufacturing is a process of making three-dimensional solid objects from a digital file. The creation of a 3D/4D 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/4D 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/4D printing has many successful applications in aerospace, construction engineering, and biomedical engineering. Novel printing of composites topic focuses on 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 have gained 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 systems. 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 the latest results on 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 and Impact dynamics of High Performance Fibers-reinforced Composites

High-performance fibers have been extensively used in the fields of aerospace, military, marine or mountaineering, etc, due to their good mechanical properties, thermal stabilities, and energy absorption properties. The high-performance fiber-reinforced composites need to withstand severe environments due to (i) low temperature and (ii) impact loads. Both (i) and (ii) may cause premature materials failures due to materials brittleness.

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 microstructures. Different cryogenic processes will result in different consequences for the high performance fibers. Generally, their interfacial bonding with the 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 a proper cryogenic process will possess higher tensile strength or abrasion properties.

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 a core-sheath structure (inner pure CNT core and outer CNT-PVA sheath, as shown in the figure) was fabricated. The CNT/PVA coated yarn can possess a 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.

Gelclad-Aerogel and Nano-technology enhanced construction composite materials

Biopolymers are gaining increasing attention as a matrix for natural fiber-reinforced composites. Bio-based composites can have great potential in 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 GELCLAD project 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 bio-composites

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 program offers an innovative solution by combining biopolymers with nanotechnologies to produce an advanced and novel cladding system, based on a single multi-mesostructured panel with excellent insulation properties, made from functional bio-polymers, bio-fibers, and aerogel to prepare a sustainable, lightweight, and a waterproof eco WPC 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.

Many other special topics will be added in the updated web