Development, Mechanical Characterization and Applications of Advanced Composites

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Overview

Composite is one of the important material in this era and it has been used for long time. However, recent past the need of the composite is increasing day by day for various applications. There are different types of composites such as polymer matrix composite, ceramic matric composite and metal matrix composites. There are various types of reinforcements such as conventional fibers, natural fibers, micro and nano particles, carbon nanotubes and etc. These composites have several applications in aerospace, automobile, electronic, marine, nuclear industrial, energy field and etc. The present day challenge is fabrication of composite and selection of materials for intended appli-cation. The conventional fiber reinforced composite are so expensive and not eco-friendly, hence there is demand for new advanced materials to replace existing conventional material for various applications. In addition, there is a need to develop advanced composites for specific applications such as Electro- optical applications and for clean energy applications.

Learning Outcomes

At the conclusion of this course, the participants are expected to:

i) Exposing participants to the fundamentals of composite materials.
ii) Assisting the participants to fabricate composite and measure the required properties
iii) Providing exposure to practical problems and their solutions, through laboratory sessions
iv) Providing the confidence to the participants to develop the advanced composite for the required application.

Modules	A: Introduction, classification and fabrication of Composite : Sep. 17, 2018 B: Metal matrix composite and nano composite : Sep. 18, 2018 C: Applications, Fabrication, Mechanical Characterization of Composite : Sep. 19, 2018 D: Metal- Polymer Nano Composite and its Applications& Analysis of Composite : Sep. 20, 2018 E: Advanced Composite and its applications : Sep. 21-22, 2018 Number of participants for the course will be limited to Fifty (50)
You Should Attend If…	Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories. Students at all levels (B.Tech/MSc/M.Tech/Ph.D) or Faculty from reputed academic and technical institutions.
Fees	**For Students from India:** Participation without grading : Rs. 1000/- Participation with grading : Rs. 1500/- **For Faculty/Scientists/Industry from India** Faculty (Internal & External) & Scientists from R&D Labs: Rs. 3000/- Persons working in Industry / Consultancy firms : Rs. 4000/- **For Participants from abroad** Students : USD 50 Faculty/Scientists/Persons from Industry & Consultancy firms : USD 100 The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation on payment basis.

The Faculty

1. Prof Sri Bandyopadhyay, Senior Visiting Fellow, UNSW Australia, Sydney

Prof Sri Bandyopadhyay is confidentially CATEI ranked by UNSW Australia relevant students as the Best Teaching Performer in UNSW Australia's a) School of Materials Science &Engineering, b) Faculty of Science, and c) the entire UNSW Australia. Professor Sri Bandyopadhyay is also a high class researcher in the fields of composites and nanocomposites. In 2013 August, Australia's Campus Review management selected him as 1 of Top 5 Australian Innovators for his re-invention of coal power fly ash. Sri Bandyopadhyay is also the originator / chair of the world's one of the best brand of composites conferences known as **ACUN** Conferences (Australia, Canada, USA, NZ) which happened on 6 occasions between 1999 and 2012 in UNSW and Monash Universities Australia. The **ACUN** conferences were ranked by attending delegates from over 20 countries as among the 5 to 10 Top world conferences. In Nov-Dec 2016 US Defense Innovations at Austin Texas appreciated Prof Bandyopadhyay's latest research on developing toughened CFRP composites by using short milled carbon fibres in epoxies - and offered him a 3 hour presentation table. This research, published in Construction & Building Materials, vol 111, 2016, 309 -407 http://dx.doi.org/10.1016/j.conbuildmat.2016.02.039 was also duly acknowledged by MIT USA's Mech Engg Emeritus Prof Ali S Argon. Earlier, Dr Bandyopadhyay was given the Best Scientist Award in Australian Defence Science & Technology Organisation, MRL, Melbourne. Also Dr Bandyopadhyay's publication Composites Science and Technology 62 (2002) 709–717, had attracted Boeing HQ in California who considered that technology attractive in developing lighter weight but stronger and tougher composites in aircraft structures (such as Boeing 787 Dreamliner).

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2. Dr. G. Raghavendra, Assistant Professor, Department of Mechanical Engineering, NIT, Warangal, India (Host Faculty)

3. Dr. S. Kanmani Subbu, Assistant Professor, Department of Mechanical Engineering, NIT, Warangal, India (Host Faculty)

Course Co-ordinators

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