



Gokaraju Rangaraju Institute of Engineering and Technology (Autonomous)

Report of the Event

Title of the Event: **ICMPC – 2014**

Organized Date: 8th – 9th March 2014

Summary:

Functional materials, smart materials, intelligent materials – whatever you call them, they will be a key pillar of 21st century technology. Among the modern structural materials there has been a tremendous advancement in science and technology of materials. In recent years, nanostructure materials and nano composites have become increasingly important because of their remarkable properties and permanently growing areas for practical applications. Various aspects of mechanical properties of nano materials including analytical and computational modelling in combination with comprehensive experimental analysis of mechanical behaviour is yet to be investigated. In spite of the rapid progress in this field, mechanical properties of nano materials and composites are still remaining terra incognita in materials science. In the field of massive and complex manufacturing we are now in need of materials, with properties, that can be manipulated according to our needs.

Large spaceplanes like the Space Shuttle would have proven extremely difficult, if not impossible, to build without heat-resistant ceramic tiles to protect them during re-entry. And high-speed forward-swept-wing airplanes like Grumman's experimental X-29 or the Russian Sukhoi S-27 Berkut would not have been possible without the development of composite materials to keep their wings from bending out of shape. Nature is full of magic materials, which are to be discovered in forms suitable to our needs. Such magical materials, also known as intelligent or smart materials, can sense, process, stimulate and actuate a response.

There is an increasing awareness of the benefits to be derived from the development and exploitation of advanced materials and structures in applications ranging from hydrospace to aerospace. With the ability to respond autonomously to changes in their environment, smart systems can offer a simplified approach to the control of various material and system characteristics. Mechanistic understanding from any discipline is the routes to the development of materials with capabilities beyond those currently available.

The conference created a cross disciplinary summit that transcends departmental, institutional, industrial, public and private research organizations and global barriers and lends itself to the integration of research and education in the vital field of advanced materials. This conference is mainly aims in major sectors of advanced processing, material characterization, modeling and simulation, properties, performance and device fabrication.