



Bangalore Chapter

**ASM International Bengaluru Chapter**

Cordially invite you to ASM Online Technical Talk

**Titled**

**"Synthesis, Characterization, Phase Stability and Application of Nanomaterials".**

BY

**Prof. Dr. Chandan Srivastava,**

Associate Professor

Department of Materials Engineering, Indian Institute of Science  
Bangalore-560012, India

*Date & Time: 28.08.2021, Saturday at 5:00 pm IST  
On-Line Tech Talk on: RingCentral Platform*

**RING CENTRAL ONLINE MEETING LINK**

<https://meetings.ringcentral.com/j/1490142803>

More Info about RingCentral Meeting Online Platform Contact: Nataraj J R @ 09901150505

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## ABSTRACT

### *Synthesis, Characterization, Phase stability and Application of Nanomaterials*

Technological applications of nano-sized systems stem from the novel properties exhibited by these systems. Some of the novel properties are increased strength, high photovoltaic conversion, depression in ordering temperatures, miscibility changes, and phase changes. Unique changes in material properties in the nanoscale regime are primarily due to the difference in the free energy landscape of a system with reduction in dimensions from bulk to the nanoscale. Changes in the free energy landscape are due to a significant fraction of atoms at or sufficiently near the surface. These surface atoms lack a full complement of nearest neighbors, as compared to the atoms nearer to the particle core, increasing the surface energy of the system. This talk will focus on the synthesis, characterization, phase stability, and few applications of isolated nanoparticles and nano-structured coatings. In the synthesis part, a brief description will be provided about the various bottom-up and top-down approaches available to synthesize nanomaterials. The characterization part will show how advanced characterization tools such as electron microscopes can be used to study the nanoparticle formation mechanism. The phase stability part will illustrate how energy of the heterophase interfaces determines the evolution and stability of phases in nano-size systems. In the application part, the use of nano-materials in magnetic recording media and in corrosion protection applications will be discussed.

### About the Speaker



Dr. Chandan's research interests are in the field of metallic coatings, Corrosion Engineering, high entropy alloy nanoparticles and coatings, metal cluster decorated graphene, application of electron microscopy technique for materials characterization and phase transformations and physical metallurgy. Education: MS and PhD from The University of Alabama, Tuscaloosa, AL, USA. B.Tech from Indian Institute of Technology, Roorkee, India.

He joined Department of Materials Engineering, IISc in May 2008 as post-Doctoral fellow and then appointed as Assistant Professor in Jan 2010 till 2016. He is currently working as Associate professor in the same department.

#### **Awards and achievements.**

Outstanding Dissertation Award by University of Alabama, USA, 2009, IEI Young Engineer Award, 2012, Young Associate of the Indian Academy of Sciences (2014-2017), DAAD (German Academic Exchange) fellowship award to visit Ernst Ruska-Centre (ER-C) for Microscopy in Julich Germany (2014), 'Certificate of Excellence' Award by the Ministry of Steel, Government of India (2014), NASI-Young Scientist Platinum Jubilee Award (2015). He is currently guiding several PG and PhD students

Time	Program Outline
4.40-4.45 pm	Login in Through RingCentral application
4.45-5.00 pm	Networking with participants and speaker
5.00-5.02 pm	Welcome Speech by Chairman
5.02-5.04 pm	Introduction of the Speaker by Secretary
5.04-6.10 pm	<b>Talk by Speaker</b>
6.10-6.20 pm	Q & A
6.20-6.25 pm	Vote of Thanks by Secretary and Log off