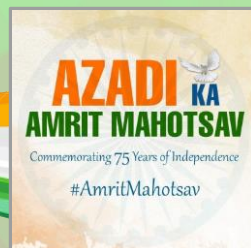


# Online Workshop on ICME READINESS OF DIGITAL PLATFORMS

An Invited Technical Presentation Series: July-August, 2021



Organized by  
**ICME National Hub**  
in association with  
**Indian National Academy of Engineering**



## ICME AT ANSYS

By

**Dr. Deepankar Pal**

Senior Principal R&D Engineer, Ansys MBU

### Date and Time

August 06, 2021 (Friday), 06:30 PM IST

### Zoom link for the event

<https://iitk-ac-in.zoom.us/j/99274377711?pwd=ZStBVlllZ053WkVTeFR6a2pCOFdoZz09>

**Meeting ID:** 992 7437 7711

**Passcode:** 524637

## ◆◆ About the Workshop ◆◆

Integrated Computational Materials Engineering (ICME) is an emerging and transformative discipline with a huge potential to accelerate materials discovery, product design and process optimization. The Indian National Academy of Engineering (INAE) is engaged in developing a technology roadmap for "Accelerated Materials Discovery, Scale-up and Exploitation Strategy for Strategic Materials Needs of India". The compilation and integration capabilities of various digital platforms that can assist the ICME community is one of the essential parts of this effort. Therefore, the ICME National Hub at IIT Kanpur, in association with INAE, is organizing a "Workshop on ICME Readiness of Digital Platforms" - a technical presentation series about the capabilities of important digital platforms vis-à-vis accelerated development, production and exploitation of materials and products.

**For more details please visit:** <https://www.iitk.ac.in/ICME/INAE-Workshop/>

**ICME National Hub Website:** <https://www.iitk.ac.in/ICME/>

**INAE Website:** <https://www.inae.in/>

## Abstract

Materials have played a fundamental role in shaping the human civilization right from its inception. Entire ages of human civilization spanning from tens to tens of thousands of years were named after discovery and use of a single material in the past. Today, the pace at which engineers perform discovery and development of new materials in addition to extending the use of already available materials for their use in traditional and novel applications, is unprecedented as the product delivery timelines are shrinking continuously. This has necessitated integration of various aspects involved in product lifecycle in addition to creation of their computational analogs. At Ansys, our approach to simulation of product lifecycle is rooted in creation of computational analogs for ideation, design and analysis, manufacturing, and operations as it relates to revenue growth and cost savings of our customers. ICME at Ansys is targeted towards the above-mentioned pillars of product lifecycle in the light of virtual materials technologies both at single and multiple length and time scales. This talk from Ansys would include our available and in-progress ICME technologies as they relate to the above-mentioned pillars of the product lifecycle. Specific examples will be provided on ideation and digital exploration using Ansys Discovery. This exercise will be followed by design, analysis and manufacturing using Ansys Mechanical, Ansys LS-Dyna, Ansys Fluids and Ansys Materials products as they relate to process <--> microstructure <--> property <--> performance relationships in addition to examples on virtual operations modeling using the Ansys Digital Twin Modeler product. The role of materials involved in these products with respect to the current release and our future plans would be conveyed through the talk and through answering questions by our expert panel which the audience may have.

## About the Speaker



**Dr. Deepankar Pal** cofounded a commercial startup, 3DSIM to address computational challenges as they relate to ICME and Additive Manufacturing (AM). His doctoral thesis, postdoctoral work, funded projects and several patents on novel computational approaches in AM served as the technical base for 3DSIM. In addition, he served and led the company as a Chief Science Officer. 3DSIM got acquired by ANSYS in 2017.

In his current role as a Sr. Principal R&D Engineer at Ansys for the Mechanical Business Unit within ANSYS, Deepankar, currently leads, researches and develops/assists in development of several key computational algorithms for ICME in general and AM in particular. Other activities include serving the ANSYS Invention Review Board (IRB), development of key Cross Business Unit (xBU) initiatives for next generation development on computational algorithms and Verification and Validation (V&V).

Deepankar has authored numerous publications, patents and book chapters. Currently, he is in the process of authoring a book as it relates to Superalloys and their compositional modifications for ICME and AM success. In addition, he enjoys startup coaching at entrepreneurial workshops across the Western United States.

## ◆◆ Conveners ◆◆

**Dr. S. Bhattacharya**  
MSME, IIT Hyderabad  
saswata[AT]msme.iitk.ac.in

**Dr. G. Phanikumar**  
MME, IIT Madras  
gphani[AT]iitm.ac.in

**Dr. P. Chakraborty**  
AE, IIT Kanpur  
cpitam[AT]iitk.ac.in

**Dr. R. Sankarasubramanian**  
DMRL, DRDO, Hyderabad  
sankara[AT]dmrl.drdo.in