

# Thermo-Calc™ Hands-on Training Course

*Conducted by*

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*Organized by*

Department of Metallurgical & Materials Engineering, IIT Madras

ASM International, Chennai Chapter

*In collaboration with*

Bhanu Scientific Systems Pvt. Ltd., Hyderabad

Date: 24—28 January 2022

Time: 3:00 pm—5:00 pm

**Last date for registration: 17/January/2022 (strict deadline)**

## Requirements

- Internet enabled PC, laptop, or tablet (to connect with the training session using Google meet or similar)
- Another PC or laptop (Windows/Mac OS/Linux) which you will be using to practice calculations during the training session, where Thermo-Calc and Databases are installed (Bhanu Scientific will provide software license and installation support)

## Outcomes

- You will learn how to use Thermo-Calc in GUI mode and Console mode
- Examples will cover applications to steels, aluminium alloys, superalloys, HEAs, ceramics, etc.

## Day 1

- Introduction to Thermo-Calc and databases
- Single point calculations: volume fractions, phase constitution, solubility limits, driving forces, activities, chemical potentials, etc.
- Tracking phase changes in a material as a function of temperature, composition, etc.

## Day 2

- Property diagrams: volume vs. temperature plot for a material
- Binary and ternary phase diagrams

## Day 3

- Multicomponent phase diagrams (isopleths)
- Thermochemical and thermophysical properties (enthalpy, heat capacity, surface tension, viscosity, density, lattice parameter, etc.)

## Day 4

- Phase relations in slag systems
- Solidification simulation (Equilibrium and Scheil-Gulliver)

## Day 5

- Chemical equilibrium calculations (chemical reactions, stability diagrams)
- Glimpses of kinetic modules of Thermo-Calc (DICTRA, TC-Prisma, etc.)
- TPython programming interface (demonstration only)

## Registration fees (including GST and other applicable taxes)

- Academic Institutes : ₹ 2900/-
- Government R&D : ₹ 3540/-
- Others : ₹ 5900/-

Payment must be made electronically to the following bank account

**Account Name: ASM INTERNATIONAL CHENNAI CHAPTER**

**Account number: 032494600000404**

**Bank name: YES BANK**

**IFSC Code: YESB0000324**

**SWIFT CODE: YESBINBB**

**BRANCH: ANNA NAGAR CHENNAI - 600 102**

After making the payment, email the participant details (i.e., full name, email address, mobile no.) and the payment transaction details to [asmicc12@gmail.com](mailto:asmicc12@gmail.com) (Mr N. Sampath Kumar, ASM Chennai Chapter) and copy to [samyvg@iitm.ac.in](mailto:samyvg@iitm.ac.in) (Mr Govindasamy, IIT Madras).

For organizing software license, we need to collect some details about your computer. Mr Bhanu Prasad (Bhanu Scientific Systems Pvt. Ltd.) will contact you regarding this.

**Registration will be on first-come-first-serve basis (only 25 seats)**