Organized by ecoTRE VALENTE DIGITAL MANUFACTURING

FUNDAMENTALS | 33RD EDITION

Solidification Course 2026

International Training in Metal Solidification and Casting, including Additive Manufacturing, Rapid Solidification & Artificial Intelligence

MAY 31 - JUNE 5, 2026 | CHAMPÉRY, SWITZERLAND

Contents

About the Course

Duration: 5 days
Language: English
Location: Hotel Suisse, Champéry (Switzerland)

Overview and key information

The Solidification Course is a unique international training program that connects **scientific knowledge with industrial practice** in metal solidification and advanced metallurgy.
Held every year in Switzerland, it offers a rare opportunity to learn directly from **world-class professors and experts** who have shaped modern solidification science.

Now in its **33rd edition**, the course combines **lectures, exercises, and open discussions** to provide a solid, applied understanding of:

- solidification fundamentals,
- microstructure and defect formation and control,
- process optimization in casting, continuous casting, and additive manufacturing.

The 2026 edition will present and open the discussion around **Artificial Intelligence and Additive Manufacturing** for process innovation in metallurgy.
Participants will strengthen their ability to interpret and predict solidification phenomena, link theory to industrial reality, and and apply simulation and optimization tools to improve product quality and process performance.

Starting with the 2026 edition, the course has been organized by **ECOTRE Valente**, continuing its scientific legacy while integrating cutting-edge expertise in digital metallurgy and simulation.

Course highlights

Key figures & global reach

For more than **30 years**, the Solidification Course has been a reference point for professionals and researchers in metallurgy and materials science.

32
editions

39
countries

35
hours of training in a single week

+1,100
participants

+380
companies

8
world-class lecturers per edition

From **research laboratories** to **industry and university**, the course connects people shaping the future of metallic materials.
Its international network includes professionals from **Europe, North and South America, Asia, and the Middle East**, creating a unique bridge between academia and industry.

A global community of metallurgists, engineers, and innovators — united by one shared goal: mastering the science of solidification.

Course highlights

Companies and institutions that have already taken part

AEROSPACE & AVIATION	AETC, Airbus, Boeing, Dassault Aviation, GKN Aerospace, MTU Aero Engines, PCC Structurals, Pratt & Whitney, Rolls-Royce, Safran
AUTOMOTIVE & TRANSPORT	Brembo, Caterpillar, CMS, FNSS Defense System, Linamar, Maxion Wheels, Renault, Stellantis, Volkswagen, Volvo
ENERGY	ABB, EDF, Fives Cryo, Framatome, General Electric, Honeywell, Siemens, Vallourec
ENGINEERING	Asulab, Danieli, DLR, Ecotre, ESI Group, Safran Tech, Sandvik, SMS Group
FOUNDRY	Constellium, Deloro, Elkem, GF Casting, Hydro, Novelis, Rio Tinto Alcan, Signicast, Talum, Tital
JEWELLERY & FASHION	Argor-Heraeus, Cendres et Metaux, Nivarox-FAR, Rolex, Swatch Group, Varinor
STEEL INDUSTRY	ABS, Aperam, Arcelor Mittal, Bohler, Buderus, Doncaster, Nippon Steel, Outokumpu, Swiss Steel Group, ThyssenKrupp
UNIVERSITIES & RESEARCH INSTITUTES	EPFL Switzerland, Brescia University Italy, IMDEA Materials Spain, KTH Sweden, Lorraine University France, McMaster University Canada, Montanuniversitat Leoben Austria, NTNU Norway, Purdue University USA, TU Delft Netherlands

The list of companies and institutions refers to past editions of the Solidification Course and is provided for informational purposes only.

Who should attend

If your work involves metals, processes, or microstructures — this course will expand how you understand and control them.

Target participants

The Solidification Course is designed for professionals and researchers who want to deepen their understanding of **metal solidification, process simulation, and metallurgical innovation**.
It's an advanced-level program that blends theory and practice, ideal for those aiming to strengthen both **technical expertise and industrial insight**.

This course is for you if you are:

- an **engineer or metallurgist** involved in casting, forging, or heat treatment;
- a **process or R&D manager** responsible for product quality and innovation;
- a **simulation or design engineer** using digital tools to optimize manufacturing;
- a **technical consultant or educator** seeking an updated, international perspective on solidification phenomena.

The program is particularly relevant for professionals working in: **foundry and metal processing industries, steelmaking (and aluminum/copper production), automotive, aerospace, energy, watch industry, and additive manufacturing.**

A basic knowledge of metallurgy or materials science is recommended.
The course ensures direct interaction with lecturers and personalized discussion on specific challenges and case studies.

Scientific program

A full week of intensive training designed to connect scientific depth with industrial know-how.

Main topics and structure

The Solidification Course offers a complete overview of the **solidification of metallic materials**. Each lecture is designed to provide a clear scientific foundation while showing how these principles apply to **casting, continuous casting, additive manufacturing, and defect control**. Participants will gain a deep understanding of:

- Thermodynamics and phase diagrams
- Heat and mass transfer
- Nucleation and grain refinement
- Micro- and macrosegregation
- Dendritic and eutectic solidification
- Columnar and equiaxed structures
- Porosity and hot tearing
- Mushy zone dynamics
- Solidification in multicomponent alloys
- Additive Manufacturing and rapid solidification
- Artificial Intelligence and optimization techniques (reverse engineering, artificial neural networks, genetic algorithms, …) applied to foundry processes and image analysis

The program combines **lectures, hands-on exercises, and films showing in-situ solidification**, encouraging active participation and discussion with the lecturers. Group work and Q&A sessions help translate theory into practical problem-solving.

Scientific program

Five days of learning, discussion, and collaboration — guided by the leading minds in solidification science.

Weekly schedule at a glance

Sunday
From 6:00 PM - Welcome, registration, and opening dinner

Monday
Opening remark – *L.Valente, C.Viscardi*
Introduction to solidification phenomena – *M. Gremaud*
Phase diagrams – *A. Jacot*
Heat & mass transfer – *M. Krane*
Nucleation and grain refinement – *A. Ludwig*
In-situ visualization of solidification (films) – *A. Jacot*

Tuesday
Microsegregation – *H. Combeau*
Dendritic structures & eutectic solidification – A. *Phillion, A. Ludwig*
Mushy zone dynamics – *H. Combeau*
Swiss Evening networking dinner

Wednesday
Porosity and defects – *M. Rappaz*
Columnar and equiaxed structures – *H. Combeau*
Open discussions with lecturers and free afternoon

Thursday
Hot tearing – *A. Phillion*
Additive manufacturing and rapid solidification – *M. Rappaz*
Macrosegregation – *M. Krane*
Session: Artificial Intelligence in foundry and metallurgy

Friday
Solidification in multicomponent systems – *M. Rappaz*
Synthesis: connecting all solidification phenomena – *A. Phillion*
Until 1:00 PM - Course ends (lunch included) – *M. Gremaud*

Faculty

Learn directly from the scientists and engineers who defined today's understanding of solidification.

Lecturers and experts

Name	Institution / Role	Country	Key Topics
Prof. Hervé Combeau	Professor, Lorraine University – Institut Jean Lamour	France	Microsegregation, mushy zone dynamics, grain structures
Dr Marco Gremaud	Solidification Course Co-founder — Former ESI Manufacturing Director / Innosuisse Expert	Switzerland	Introduction, coordination, industrial applications
Dr Alain Jacot	R&D Manager, Physics & Materials, Keysight Technologies	Switzerland	Phase diagrams, in-situ visualization of solidification, AI & optimisation techniques
Prof. Matthew J. M. Krane	Professor, Purdue University	USA	Heat and mass transfer, macrosegregation
Prof. Andreas Ludwig	Professor Emeritus, Montanuniversität Leoben	Austria	Nucleation, eutectic solidification, structure formation
Prof. André Phillion	Professor, McMaster University	Canada	Dendritic growth, hot tearing, synthesis
Prof. Michel Rappaz	Solidification Course Co-founder — Professor Emeritus, EPFL Lausanne	Switzerland	Porosity, additive manufacturing, multicomponent alloys, AI & optimisation techniques

Fees and Registration

All you need for an intensive, all-inclusive training week in the Swiss Alps.

EARLY BIRD offer*: single registration

Valid until February 28, 2026

~~CHF 7,200~~	**CHF 6,120**	**-15%**
Registration fee:	~~CHF 800~~	CHF 680
Course fee:	~~CHF 6,400~~	CHF 5,440
Total price:	~~**CHF 7,200**~~	**CHF 6,120**

CORPORATE PACK*: for 2+ participants

Can be combined with the EARLY-BIRD offer

2 participants: **-3%** 3 or more: **-5%**

Corporate Pack discounts are applied either to the **Standard Price or to the Early-Bird Price**, depending on which promotion is active at the time of registration. The discount percentage applies to each participant in the same company group (2, 3, or more registrations). Discounts cannot be combined with scholarship reductions.

What's included?

- 5 days of advanced lectures, exercises, and discussions
- A printed copy of the reference book "Solidification" by Dantzig & Rappaz
- Full course materials and exercise handouts
- Hotel accommodation (full board) at Hotel Suisse, Champéry
- Lunches, dinners, coffee breaks, and social events
- Access to the Solidification Course alumni network and digital resources

* All prices are in CHF (Swiss francs).

Fees and Registration

How to register

To reserve your place:

Contact the course secretariat at
registrations@solidificationcourse.com

Seats are limited *– early registration is strongly recommended to secure your participation and benefit from the Early-Bird offer.*

Once your registration is confirmed, you will receive payment instructions and all practical details for your stay.

Payment methods

BANK TRANSFER

CREDIT CARD

PAYPAL

Valente Scholarship

Empowering the next generation of metallurgists — through knowledge, mentorship, and opportunity.

In memory of Dr. Tiziano Valente, founder of Ecotre Valente

Support for young metallurgists and researchers

Promoted by ECOTRE Valente, the Valente Scholarship supports talented young professionals and researchers who wish to attend the **Solidification Course 2026**.

The initiative was created as an evolution of the Tiziano Valente Scholarship, established in memory of ECOTRE's founder to promote education, innovation, and the growth of new talents in metallurgy. From this same vision originated the Tiziano Valente Master Thesis Award, established by the **Italian Metallurgy Association (AIM)** to recognize excellence in **simulation, artificial intelligence, and digital transformation** applied to metallurgical processes.

Through the Valente Scholarship, ECOTRE extends this commitment to the Solidification Course. Applicants must be **no more than 30 years old** and submit a **curriculum vitae** together with a **short project or research proposal** related to metal solidification, preferably with a focus on artificial intelligence applications.

What the scholarship covers

The Valente Scholarship* covers **50% of the course fee**. Recipients pay only: **CHF 4,000 total**.

How to apply: book a call with our advisor

Candidates are invited to **request a consultation with our course advisor**, Cristian Viscardi, who will evaluate profiles and guide them through the application process. Write to advisor@solidificationcourse.com specifying "Scholarship Call" in the subject line.

* The scholarship cannot be combined with the Early-Bird offer. The total price include CHF 800 registration fee + CHF 3,200 for the reduced course fee.

Orientation & Admission

Ing. Cristian Viscardi, Technical Director in ECOTRE Valente

A personal conversation to help you decide, plan, and get the most from your Solidification Course experience.

Free consultation with our advisor

Choosing the right advanced training is an important step — and we want to help you make it with confidence. Before registering, every interested participant can request a **free one-to-one consultation** with our course advisor.

This short meeting is designed to help you:

- understand the course structure and contents,
- assess whether your background and goals fit the program,
- receive guidance on registration or scholarship opportunities.

The consultation is not an exam — it's a friendly and professional conversation aimed at clarifying doubts and ensuring that your participation will bring real value to your career and your company.
You'll be speaking directly with our advisor, **Cristian Viscardi**, who will guide you through the selection and registration process.

How to book your consultation

Simply write to advisor@solidificationcourse.com specifying "Orientation Call" in the subject line.

Ecotre Valente

Ing. Lorenzo Valente, CEO of Ecotre Valente

Knowledge, innovation, and passion for metallurgy — this is the foundation on which ECOTRE builds the future of manufacturing.

Organizer and mission

ECOTRE Valente is an Italian engineering company specialized in **digital manufacturing and metallurgy**.
Its mission is to help manufacturing companies accelerate their **digital transformation**, reduce defects, lower costs, and improve performance by replacing traditional physical trials with **digital testing and process optimization**.

Operating across **six digital lines** – foundry, metal forming, additive manufacturing, heat treatment, welding, and machining – ECOTRE provides advanced **software, training, and technical services** that drive industrial innovation.

The company has three competences centers: one **Software distribution Center**, one **Training Center**, and one **Consultancy Center**.

For over twenty years, ECOTRE has actively promoted **technical education and knowledge sharing**, collaborating with leading Italian Polytechnics and supporting young talents through the **Tiziano Valente Scholarship**.

Since the 2026 edition, ECOTRE Valente has taken the lead of the world's most prestigious training in metal solidification — the Solidification Course — reaffirming its leadership in knowledge, innovation, and the digital transformation of metallurgy.

FAQ

Useful answers before you apply

In what language is the course held?
All lectures and discussions are in English. A good working knowledge of English is sufficient; fluency is not required.

Do I need an advanced background in metallurgy?
The course is designed for professionals and researchers with a basic understanding of metallurgy or materials science.
It's an advanced-level program, but concepts are clearly explained and reinforced through examples and discussions.

How does the Early-Bird discount work?
The Early-Bird offer gives a 15% discount on the full fee for registrations completed by January 31, 2026. Seats are limited, and the promotion automatically expires after this date.

Are there discounts for companies or teams?
Yes. Corporate Packs offer automatic discounts for group registrations: –3% for 2 participants, and –5% for 3 or more.

Where does the course take place?
At Hotel Suisse, in Champéry (Switzerland), a mountain resort 100 km from Geneva: www.hotelsuissechampery.ch

What is included in the registration fee?
The fee covers lectures, materials, the book "Solidification" (Dantzig & Rappaz), hotel accommodation, full board, coffee breaks, and social events. Everything you need for an immersive training week in the Swiss Alps.

How can I apply for the Valente Scholarship?
Write to advisor@solidificationcourse.com specifying "Orientation Call" in the subject line. During this call, you'll receive all the details on eligibility, deadlines, and selection.

Who should I contact to request assistance for registration?
For any questions related to payment or registration details, please contact our office at registrations@solidificationcourse.com

Contacts

We look forward to welcoming you to the Swiss Alps for an unforgettable week of learning, collaboration, and innovation.

If you still have questions, our advisors and registration team are here to help — from your first contact to the day you join us in Champéry.

Orientation & Consultation

For more information or to request an orientation call with our advisor Cristian Viscardi:
advisor@solidificationcourse.com

Valente Scholarship

To apply for the Valente Scholarship or ask about eligibility and selection:
advisor@solidificationcourse.com (please specify “Scholarship Call” in the subject line)

Registration & Assistance

For questions about payments, confirmations, or registration details:
registrations@solidificationcourse.com
Our registration team will guide you through every step of the process.