



Funded by  
the European Union

A pair of hands wearing blue nitrile gloves holds a clear petri dish. Inside the dish is a sample of green, branching, bead-like material, likely a bio-based material or algae. The background is a blurred laboratory setting.


# Master in Advanced Materials for Innovation and Sustainability

EIT-LABELLED

MASTER'S PROGRAMME



# Introduction



Our modern lifestyle relies on raw materials. From the iron and steel of our railway infrastructure to the gold and silver in the circuitry of smartphones: raw materials are everywhere. Even the transition to a climate neutral future requires cobalt for electric vehicles, lithium for rechargeable batteries, silicon for photovoltaics and solar panels, and rare earth elements for wind turbines that generate renewable energy.

As the world grows smaller and more hyper-connected, the impact of society on the Earth has never been more visible. It is now clear that we need to shift to a circular economy in order to responsibly use the Earth's finite resources. But what can just one individual do to help? More than you think! Real change requires courage, innovative thinking, and collective action – the same skill set that EIT RawMaterials Academy looks for in prospective students. Are you ready to mine your raw talent, help shape a more circular, green economy, and create sustainable solutions for tomorrow?







# What do we offer students?

EIT RawMaterials Academy offers students a unique opportunity to learn in a dynamic environment, focusing on real-life challenges. Awarded by the EIT (European Institute of Innovation and Technology), a body of the European Union, the EIT Label is a certificate of quality that is granted only to excellent educational programmes at the master's and doctoral level.

As a student of an EIT-Labelled programme from EIT RawMaterials Academy, you'll be part of the largest European raw materials network with more than 120 core and associate partners and 180 project partners, including higher education professionals, researchers, and industry experts from over 20 European countries. As an EIT Label student, you will be welcomed into this network and will champion and contribute to the EIT RawMaterials goals of finding new, innovative solutions to secure the sustainable supply of raw materials across the value chain: from explo-

ration, mining and extraction, to mineral processing, recycling and the movement towards a circular economy. EIT RawMaterials aims to equip a new generation of innovators in Europe with the necessary entrepreneurial mind-set for designing and delivering materials solutions. You'll also get the chance to collaborate internationally and develop sustainable solutions to pressing economic, environmental and societal challenges. And long after you graduate, you can stay connected via EIT RawMaterials Alumni.



JOIN AN EIT-LABELLED PROGRAMME AND BECOME A  
GLOBAL GAME-CHANGER, ARMED WITH THE KNOWLEDGE,  
SKILLS AND EXPERIENCE EMPLOYERS SEEK.





# What to expect?

→ Thesis internship placements at leading European companies

→ Membership of the EIT RawMaterials Alumni community

→ 'Learning by doing' with challenge-based courses that focus on real-life problems

→ Study tours and visits to innovative companies and industrial sites

→ Exciting new ways of learning: online courses, virtual and augmented reality and MOOCs

→ Courses designed to nurture start-up ideas with accelerators and incubators

→ Course modules dedicated to entrepreneurship and innovation skills

→ EIT RawMaterials Innovation support: business plan competitions, innovation bootcamps, seed funding

→ Expertise in a raw materials discipline – a comprehensive understanding of the entire raw materials value chain

→ EIT RawMaterials summer schools and interdisciplinary courses

→ European mobility – study in at least two European countries



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# Master in Advanced Materials for Innovation and Sustainability

Awarded the EIT Label in 2016

## THE CHALLENGE

As global and EU populations and subsequent welfare demands increase, consumption per capita is also on the rise. In the EU especially, consumption has outpaced production, particularly with respect to the more complicated, resource-intensive technologies and products that have become part of daily life. As a result, recycling is of utmost importance to diversify our supply sources and meet society's needs.

AMIS is a master's programme in Advanced Materials for Innovation and Sustainability. The primary objective of the programme is to provide students with an understanding of the full raw materials value chain and a mind-set for innovation and entrepreneurship focusing on sustainability. AMIS tackles this challenge by focusing on three themes – all of which are central themes of EIT RawMaterials:

- Substitution of critical or toxic materials in products for optimised performance
- Material chain optimisation for end-of-life products
- Product and services design for the circular economy

AMIS aims to train T-shaped professionals – experts in a particular raw materials discipline with an overview of the entire raw materials value chain. T-shaped professionals also work closely with industry professionals to explore how innovation and entrepreneurship can strengthen the market uptake of raw materials solutions.

Through the programme, AMIS students will become experts in the field of raw materials, particularly in sustainable functional materials, while gaining a holistic view of the value and process chain.



|                                |   |
|--------------------------------|---|
| <b>Double Diploma</b>          | <b>From two of the following:</b> <ul style="list-style-type: none"> <li>– Grenoble INP: Master Science et Génie des Matériaux</li> <li>– Aalto University: Master of Science (Technology): Functional Materials for Global Challenges</li> <li>– TU Darmstadt: Master of Science in Materials or Master of Science in Physics or Chemistry</li> <li>– University of Bordeaux: Master Sciences et Technologies, mention CHIMIE, Advanced Hybrid Materials: Composites and Ceramics by Design</li> <li>– University of Liège: Master Sciences Physiques or Master Sciences Chimiques</li> <li>– EIT Label Certificate</li> </ul> |
| <b>Credits</b>                 | 120 ECTS, 24 months   |
| <b>Language of Instruction</b> | English   |
| <b>Starts in</b>               | September   |
| <b>Requirements</b>            | Eligible candidates must have a bachelor's degree in Science, Technology or Engineering (Physics, Chemistry, Materials Science) or its equivalent, as well as an English language certificate.  |
| <b>Tuition fees</b>            | EU students 2021: €1,000/year<br>Non-EU students 2021: €8,000/year<br>Check amis-master.eitrawmaterials.eu for up-to-date information.  |
| <b>Application Period</b>      | 1st round: 1 October 2020 – 31 January 2021<br>2nd round: 1 February 2021 – 30 April 2021   |
| <b>Scholarships</b>            | For students beginning in September 2021, EIT Label scholarships from EIT RawMaterials of €13,500 per eligible student are available. For information on how EIT Label scholarships will be awarded and who is eligible, please contact the coordinating university directly: <a href="mailto:contact@amis-master.eu">contact@amis-master.eu</a>  |



I chose the AMIS master's because it gives me the opportunity to spend one year of my master's degree at a university in another European country, and I also really like the ideas about future orientation, innovation and sustainability.

— **BASTIAN, GERMANY**

#### PARTICIPATING UNIVERSITIES

**Aalto University**  
 Finland  
**University of Bordeaux**  
 France  
**Technische Universität Darmstadt**  
 Germany  
**Grenoble INP**  
 France  
**University of Liège**  
 Belgium

#### FOR MORE INFORMATION

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# Master in Advanced Materials for Innovation and Sustainability

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## INNOVATION AND ENTREPRENEURSHIP TRAINING

Robust entrepreneurship education is a cornerstone of AMIS. Students will have the benefit of well-rounded, hands-on innovation and entrepreneurship training that will equip them for a professional future, including joint collaboration courses with AMIS partners:

- Project-based courses (Inno Projects I and II) focusing on development of business models for the commercialisation process of new technologies
- The one-week intensive summer school working in teams on industry case studies to create new or significantly improved products, services, processes, policies, new business models or jobs
- Inno-Mission Internship: work experience in a company or research organisation developing a solution-focused approach by translating innovations into feasible business solutions and the commercialisation of new technologies
- Practical work on various industrial projects integrated with innovation and entrepreneurship content

Throughout the programme, students will have the opportunity to meet with relevant academic contacts in the innovation and entrepreneurship ecosystem as well as non-academic partners (industries, research and training organisations, entrepreneurs) who will also support future career building.

The objective is to share best practices to enable learning from their methods and mistakes. If the results of a master thesis are deemed suitable, AMIS graduates can also expect assistance from partners in setting up a business or spin-off.

## ARE YOU A STUDENT WHO IS:

- Interested in sparking innovation in the raw materials sector?
- Keen to become entrepreneurial and start your own company?
- Motivated to find real solutions to environmental and societal challenges?
- Interested in hands-on learning in industry and research companies?

## PROFESSIONAL PROFILES AFTER GRADUATION

AMIS alumni skills and knowledge will be highly appreciated by industries in the Materials Science domain or by laboratories, especially in the following sectors: microelectronics, optics, bio-technologies, energy, communication and environment. As a resource engineer, potential career paths include:

**Academic career/research:** at universities and research institutions, whether teaching students or in managerial positions. Scientists with high commercialisation awareness, knowledge and competence who can effectively communicate the commercial value of their scientific research.

**Resource industry:** SMEs in chemistry, exploration, green energy, machinery and plant construction, the metal working industry, ceramics, environmental economy (R&D, product development, management, production, marketing and sales). Expert or manager whose actions and decisions influence the innovation output, value creation and performance of the company.

**Freelancer and entrepreneur:** creating one's own business or becoming a consultant.

**Wider society:** science journalism, consulting, project development and management, advisor to policy makers, administration, specialist agencies, media, etc.



# Programme Structure

AMIS is a two-year programme:

**YEAR 1** takes place at Grenoble INP, Aalto University or TU Darmstadt. Once students have chosen their entry university, AMIS provides a general curriculum in Materials Sciences, including mandatory courses in Advanced Functional Materials and Innovation, Business and Entrepreneurship.

**YEAR 2** is the specialisation year and takes place at one of the five consortium partner universities. Year 2 includes mandatory courses in Advanced Functional Materials with a specialisation in material interfaces, nanomaterials, ceramics or hybrids, as well as the master thesis, a research and development experience in material science jointly supervised by home university professors and host non-academic partners. Student mobility is an integrated part of the programme, involving study at two of the five consortium partner universities, depending on your chosen speciality. Year 1 and Year 2 must be taken at universities in different countries.

## MOBILITY AMIS YEAR 1 (60 ECTS)

### TRACK 1

Grenoble INP

### TRACK 2

Aalto University

### TRACK 3

TU Darmstadt

#### Topics:

- Advanced functional materials
- Innovation, business and entrepreneurship
- Project work on business models and commercialisation of technologies
- Non-academic internship



SUMMER SCHOOL: DEVELOPING SOLUTIONS TO INDUSTRIAL CHALLENGES



## MOBILITY AMIS YEAR 2 (60 ECTS)

### TRACK 1

TU Darmstadt  
Aalto University  
University of Liège

### TRACK 2

TU Darmstadt  
University of Liège  
University of Bordeaux  
Grenoble INP

### TRACK 3

Aalto University  
University of Liège  
University of Bordeaux  
Grenoble INP

#### Topics:

- Advanced functional materials with specialisation
- Practical work on industrial challenges using innovation and entrepreneurship
- Specialised approach to business modelling
- Thesis carried out with university and AMIS partners
- Non-academic internship

**Darmstadt**  
Functional  
ceramics

**Aalto**  
Nanomaterials  
and interfaces

**Liège**  
Nanomaterials  
and modelling

**Bordeaux**  
Advanced  
hybrid materials

**Grenoble**  
Materials  
and interfaces



# Exclusive activities and support for EIT-Labelled students

Students on EIT-Labelled master's programmes within the EIT RawMaterials Academy receive a range of additional opportunities to boost their innovation and entrepreneurship skills, grow their network in the raw materials sector and gain the experience they need to thrive.

These exclusive events bring together EIT-Labelled students from across the Master School, and form the basis of your shared learning experiences, making you a full member of the EIT RawMaterials community.

## SEMESTER 1

- **Label Induction Days.**  
Meet the EIT RawMaterials Academy and learn how to get involved in our community and the many opportunities on offer. Sign up for EIT RawMaterials Alumni and start growing your network.
- Vote for your representative on the Label Student Board, or stand for election!

## SEMESTER 2

- **Label Start-Up! Days.**  
Get together with 100 Label students to meet and learn from five EIT RawMaterials supported start-ups. Hear about the experience of setting up a company in the raw materials sector, and network with entrepreneurs.
- All costs covered by EIT RawMaterials.





## SEMESTER 3

### → **The RACE.**

The Raw and Circular Economy Expedition is a challenge-based summer school for 70 students from around the world, taking place over two weeks in four different European countries. Find out more at [race.eitrawmaterials.eu](https://race.eitrawmaterials.eu).

- All costs covered by EIT RawMaterials for Labelled students selected for participation.

## SEMESTER 4

### → **Label-Launch!**

Celebrate completing your EIT-Labelled Master's programme during EIT RawMaterials' major event – the RM Summit. Take part in matchmaking events with EIT RawMaterials industry partners and start-ups, and make new connections with raw materials professionals.



# Do you have a raw materials business idea?

EIT RawMaterials offers a range of support for individuals and companies with innovative business ideas, including:

## Pre-Jumpstarter Workshop

- This exclusive event for students on the EIT RawMaterials Academy Labelled master's programmes offers support to develop your thinking around a start-up idea and, in particular, to prepare you to apply to the EIT Jumpstarter.

## EIT Jumpstarter

- One of Europe's top pre-accelerator programmes, to help you develop your business idea and understand what's needed to create a successful start-up.

## Booster call

- Financial and network access support for start-ups and SMEs in the raw materials sector.

## EIT RawMaterials Accelerator

- A three-stage accelerator programme to help start-ups with a developed product to bring their solution to the market.



# EIT RawMaterials Alumni

From the moment you join an EIT-Labelled master's programme in the EIT RawMaterials Academy, you are eligible to join EIT RawMaterials Alumni. This organisation provides a great opportunity to network with past and present participants in the many and varied EIT RawMaterials activities, such as business idea competitions, start-ups, professional development courses and Master's and PhD programmes.

It is run by and for its members, who can benefit from events, career development and educational activities and much more, forming a hub for a diverse range of raw materials students, academics and professionals. Furthermore, the EIT RawMaterials Alumni provides you with a connection to the wider EIT Alumni community and alumni events around Europe.





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