

# SINReM

International Master of Science in

**Sustainable and  
Innovative  
Natural  
Resource  
Management**



**Be bold. Be innovative. Take action ...**

# You Want to Make a Difference ...

... for yourself? ... for the environment?  
... for the way we use the Earth's resources?  
But you don't know how ...

- Are you someone who can see the **bigger picture**?
- Are you **curious** about exploring other countries and cultures?
- You enjoy **working independently** and studying in groups on case-studies and projects?
- Do you want to research and develop **solutions for tomorrow's problems**? Can you apply these technical solutions creatively?
- Do you want to **implement your own ideas**? Maybe you want to work in a company that you've built yourself or with a group of close colleagues?

We have developed a programme in which you:

- Study together in an **international group** at three excellent universities across three European countries
- **Research new technologies** such as the recycling of Earth's natural resources together with other young scientists, lecturers and industry representatives
- Will be part of a **large community** of 115 universities, research institutes and companies from 22 countries, who will work together to carefully and sustainably deal with critical raw materials
- Aim to start **your own business** or use your new skills in an established company in a variety of fields

Then you have found what you have been looking for.



# Study

... with your international group of students in three European countries at excellent universities

... together with scientists and experts from industry with extensive experience in the field

... with the aim of starting your own business, or to use your innovation skills in an existing company to recycle critical materials

Be part of a large community of 115 universities, research institutes and companies from 22 countries within the EIT Raw Materials

Work together with peers from a diverse background to carefully and sustainably deal with the Earth's resources

Instigate a paradigm shift in the industry by developing a holistic view on raw materials processing

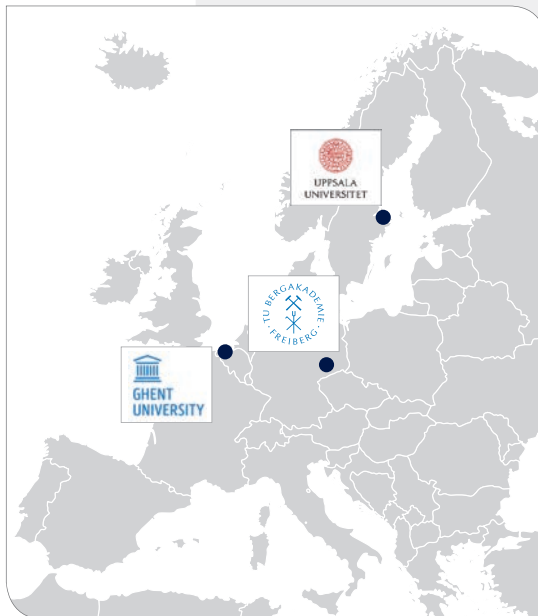


# Our Aim is Entrepreneurial Spirit

SINReM will:

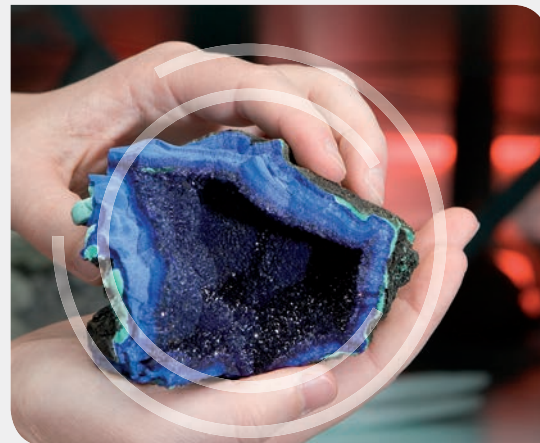
- Educate and train the next generation of professional 'Resource Engineers'
- Focus on developing concepts and technology throughout the value chain of raw materials to increase sustainability

You will get a joint master degree from



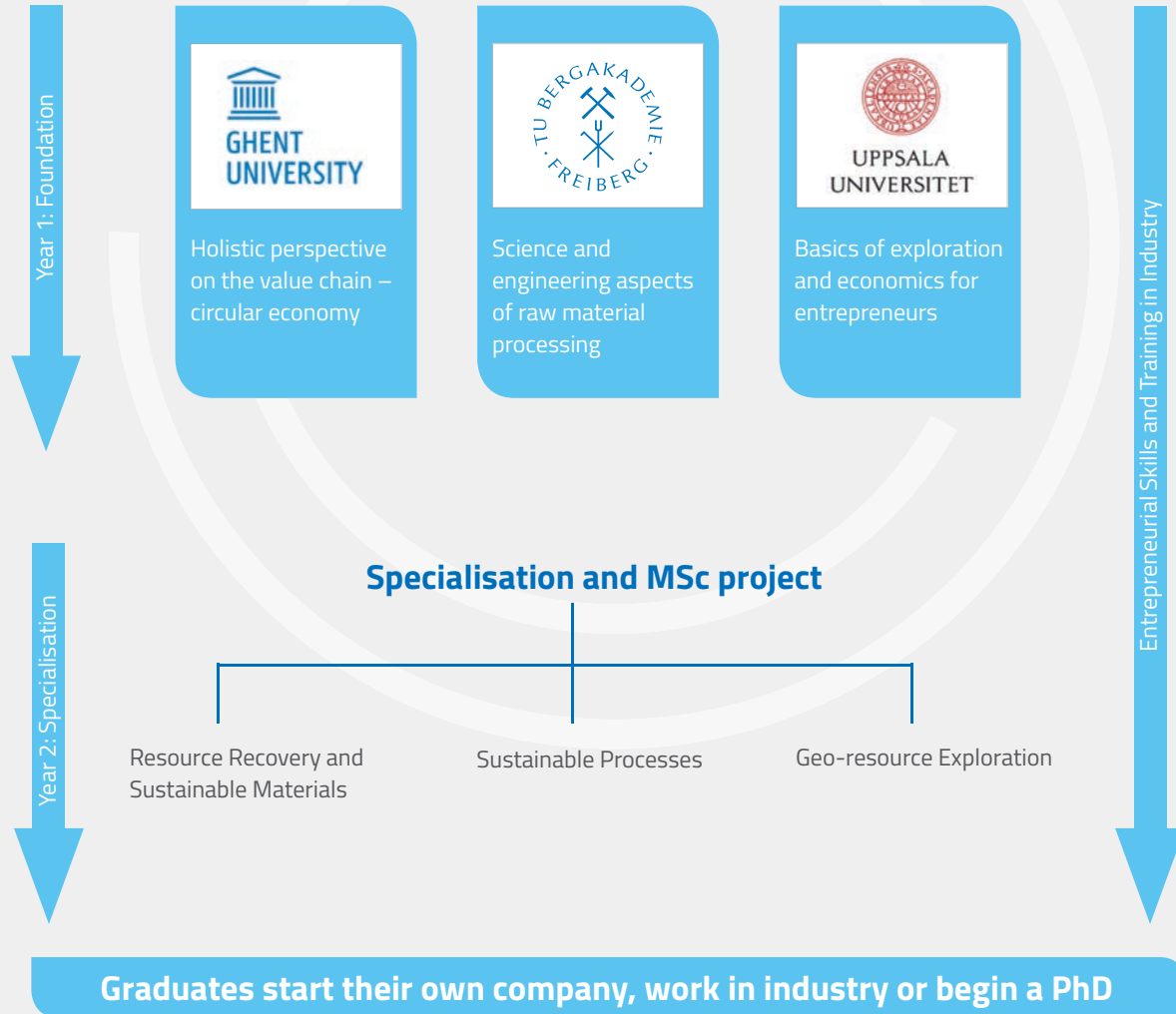
As a successful graduate you will have developed:

- A holistic view of the entire value chain and circular economy, with a deeper understanding of one specific topic, developing into T-shaped professionals
- Technical skills for optimising different parts of the processing chain; from exploration, to recycling and replacement
- A highly entrepreneurial mind-set with a strong focus on innovation
- An increased sense of initiative, self-empowerment and self-esteem
- Skills for creative problem solving





# Joint Teaching Programme



# Studying is Fun

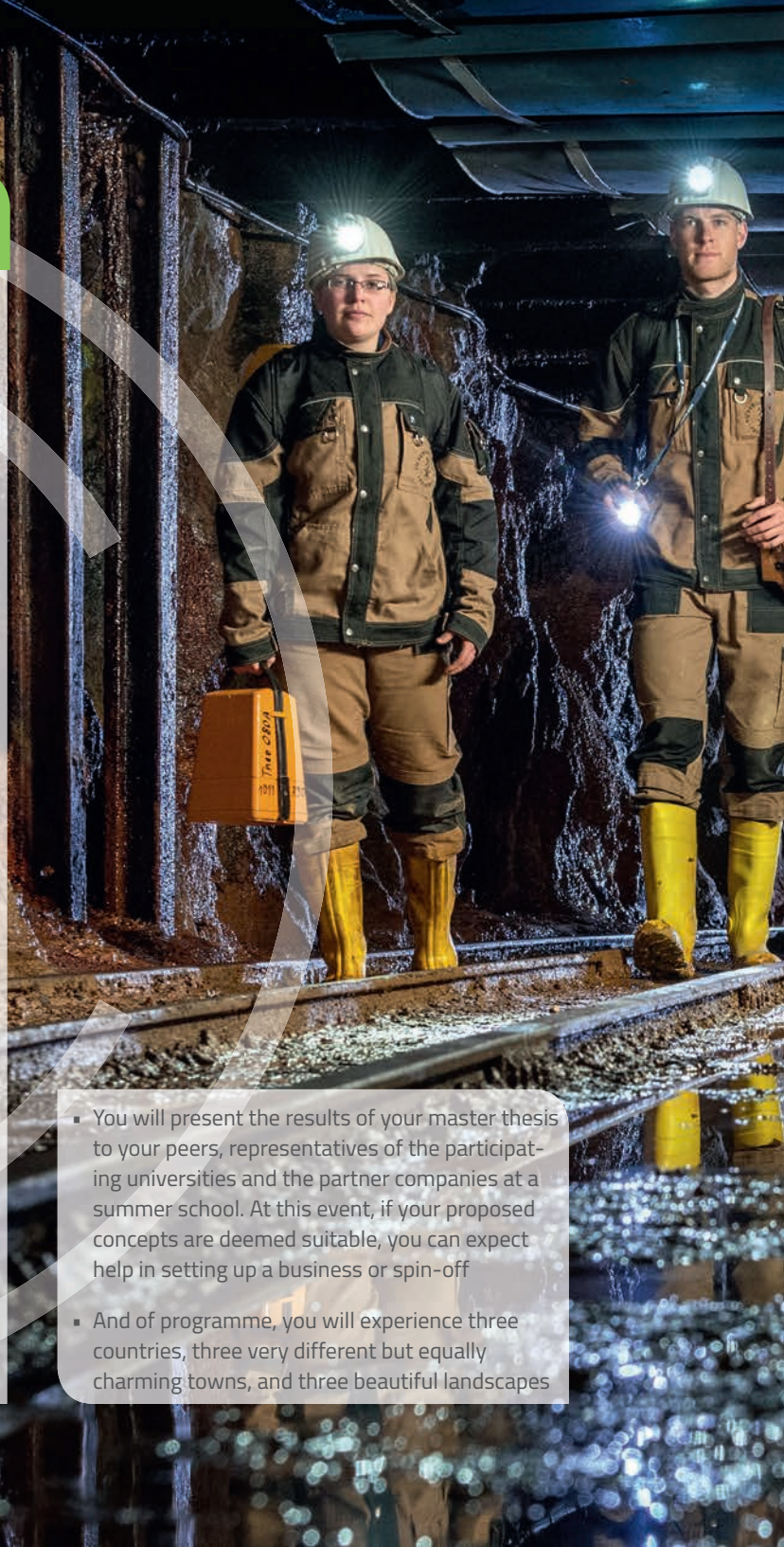


## Blended teaching methods make the difference

- Firstly, you won't be studying alone. A diverse group will be working together throughout the programme—we are expecting students from every continent
- Using innovative blended learning methods, you will take your first steps towards learning how everything is connected in the Circular Economy.
- You will explore the angles for technological and social change are and where there are niches in the market for new business ideas
- There are programmes where you will be working in small groups to solve problems from actual industry case-studies. Through cooperation with other small groups, you will solve mutual problems and learn about working creatively. This is all excellent practice for what is required of future entrepreneurs and executives
- In your practical laboratory work you will be up-close to the latest research and get a first-hand experience of how innovations come about. All three universities and industrial partners are working to solve issues essential for the future of our planet
- You will meet entrepreneurs, to learn from their methods and lessons learned
- Also included in the programme is practical training with the SINReM partner companies
- You will complete a literature study based on research that has not yet found an application, and develop a concept of how to transfer them into corporate practice

▪ You will present the results of your master thesis to your peers, representatives of the participating universities and the partner companies at a summer school. At this event, if your proposed concepts are deemed suitable, you can expect help in setting up a business or spin-off

▪ And of programme, you will experience three countries, three very different but equally charming towns, and three beautiful landscapes







# Your Professional Future



## Resource industry and plant construction for this field

Small, medium and big companies in chemistry, exploration, green energy, machinery and plant construction, metal-working industry, ceramics, environmental economy e.g. in R&D, product development, management, production, marketing and sales

## Circular economy

Research, production, analytics, management, marketing and sales

## Freelancer & entrepreneur

Create your own business or become a consultant

## Research

At Universities and research institutions in research, teaching of students or management

NGOs, governmental organisations, politics, organisations of European Union, UNO etc.

Science journalism, consulting, policy advice, project development and management, subsidy administration, special-ists agencies, media, professional networking, chamber of commerce, fair management for the circular economy

SINReM offers contacts with industries throughout your study, it prepares you to start your own business, or to take on a role at a university or research institute.

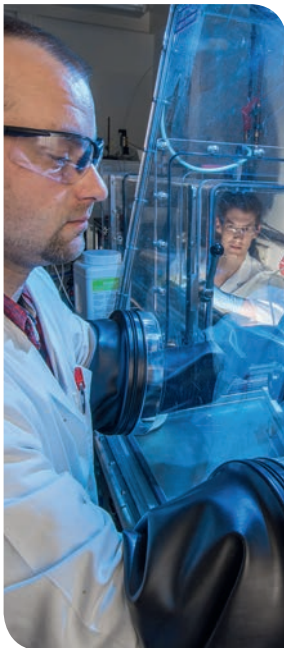


As a resource engineer, you are not limited to a career in science, you could also consider becoming an advisor to policy makers, work at a non-profit organisation or as a consultant.

# T-shaped Professionals

## Year 1: Holistic view on value & process chain

<b>Introduction to the Circular Economy, Economics and Management of Natural Resources</b>  (4 ECTS)	<b>Winter School</b>  <b>Problems and Innovations in the Process Chain of Rare Materials</b> One day theory, one day industrial application for each step along the process chain  (4 ECTS)	<b>Georesource Exploration and Characterisation</b>  (5 ECTS)  <b>Raw Materials Network Seminar</b>  (5 ECTS)	<b>Summer School</b>  <b>Resources Chemistry</b> (Chemical foundation of raw materials processing technology)  (9 ECTS)
September–January Ghent University	December TU Bergakademie Freiberg	January–June Uppsala University	June–August TU Bergakademie Freiberg




## Year 2: Deep understanding of one subject area

<b>Georesource Exploration and Assessment</b>	<b>Sustainable Processes</b>	<b>Sustainable Resource Recovery/Recycling and Sustainable Materials (substitution)</b>
Uppsala University	TU Bergakademie Freiberg	Ghent University



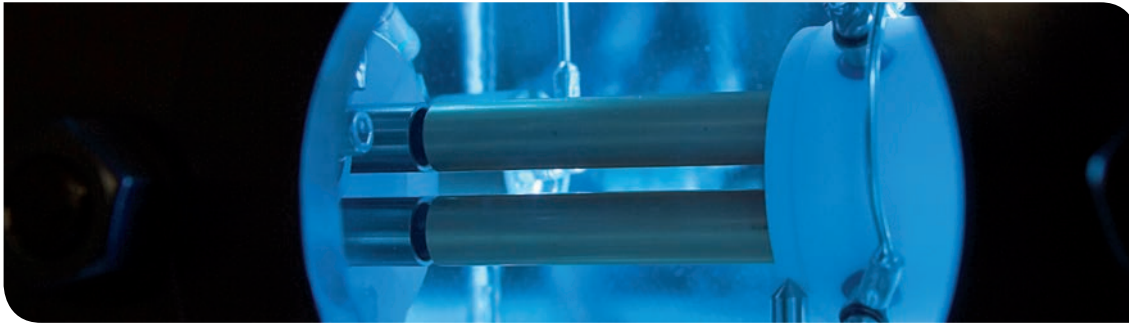


# Key Entrepreneurial Skills

Year 1				Year 2	
 <p>Induction Week</p> <p><b>Guest lecture with case study where a supply chain challenge was turned into an economic opportunity</b></p> <p>(Industry partner)</p>	<p>Winter School</p> <p><b>Meet the Founders</b> interviews/talks with company founders (successful and unsuccessful) from the raw materials sector</p> <p>(Freiberg school of Entrepreneurship SAXEED)</p>	<p>Core Module</p> <p><b>Innovation Management, Entrepreneurship and IPR</b></p> <p>Uppsala School of Entrepreneurship</p> <p>(10 ECTS)</p>	<p>Summer School</p> <p><b>Meet the Founders</b> Interviews/talks with company founders (successful and unsuccessful) from the raw materials sector</p> <p>(Freiberg school of Entrepreneurship SAXEED)</p>	<p><b>Literature Study and Business Plan</b></p> <p>Small groups review literature of a research field with application potential (TRL &lt; 6) and develop a business plan (supported by Freiberg school of Entrepreneurship SAXEED)</p> <p>(5 ECTS)</p>	<p><b>Master Thesis</b></p> <p>Students get the possibility to do applied research in collaboration with industry.</p> <p>If they want to develop a start-up, they get support by the technology transfer departments and the KIC.</p>
				<p>Training in industry all partners (Coordinated by TU Bergakademie Freiberg)</p> <p>(5–15 ECTS)</p>	
				<p>October–January TU Bergakademie Freiberg (online)</p>	<p>February–June all 3 Universities</p>
September Ghent University	December TU Bergakademie Freiberg	January–June Uppsala University	June–August TU Bergakademie Freiberg	October–January TU Bergakademie Freiberg (online)	February–June all 3 Universities



# About the SINReM Partners



Both **Ghent University** and **Uppsala University** are highly regarded in international rankings, respectively 90th and 98th in the Times University ranking (2014) and 62th and 60th in the Shanghai Academic Ranking (2016). **TU Bergakademie Freiberg** is the oldest mining university in the world with extensive expertise on natural resources. It has close ties with many industrial partners, and for many years has been one of the most successfully German universities regarding technology transfer into start ups.

Uppsala University supplies their expertise in the exploration of novel geo-resources, innovation management and entrepreneurial training in the raw materials sector. The TU Bergakademie Freiberg offers its proficiency in sustainable and environmentally-friendly extraction technologies, as well as raw material recovery processes. Ghent University will contribute through its leading Centre for Environmental Technologies, as well as its focus on biotechnology, the design and use of sustainable materials and recovery of resources from waste.

The SINReM consortium will be complemented by a range of industrial partners focused on mining and geo-resource exploration, chemical and environmental technology, development of sustainable materials and recycling technology.

## Non-academic partners:

**Umicore**—a global materials technology group, a pioneer in the recycling sector

**BASF**—the world's leading chemical group with more than 100,000 employees worldwide

**Sandvik**—a high-technology tools and tooling systems engineering group in more than 150 countries

**VITO**—the largest Belgian research institution active in the fields of energy, environment and materials



## Programme costs



Programme costs cover institutional tuition fees, insurance and participation in all teaching activities of the programme, including lab courses, excursions and MSc research project. For European Students (EU, European Economic Area (EEA) and Switzerland) programme costs are normally 6,000 €/year. For all other students the programme cost is set at 12,000 €/year. **European students can request a waiver** from the Management Board to reduce the programme cost to as low as **2,000 €/year** (including insurance). Applications received until 31 January are guaranteed to receive a waiver. After this date waivers are subject to availability. **We strongly encourage students to apply!**

All students can apply for travel scholarships to cover travel and accommodation during selected parts of the programme. You can find more information about scholarships and waivers at: <http://sinrem.eu>

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## Admissions requirements



A bachelor degree (minimum 180 ECTS) in engineering or science including 15 ECTS in mathematics and/or physics and 10 ECTS in chemistry, or an equivalent qualification from a recognised University or Engineering College

### Candidates with the following nationalities:

Australia, Botswana, Canada, Eritrea, Gambia, Ghana, Guyana, India, Ireland, Kenya, Liberia, Malawi, Namibia, New Zealand, Nigeria, Philippines, Sierra Leone, South Africa, Sri Lanka, Trinidad and Tobago, Uganda, UK, USA, Zambia, and Zimbabwe: successful completion of 60 ECTS (or equivalent) in a degree programme held in English at a HE-Institution

**All other candidates:** English language test with the following minimum requirements:

- TOEFL IBT 86
  - TOEFL PBT 570
  - ACADEMIC IELTS 6,5 overall score with a min. of 6 for writing
- (validity of 5 years; TOEFL/IELTS predictive tests and TOEIC cannot be accepted)

**Admissions:** You can apply for the SINReM programme through the application portal: <http://www.bioengineering.ugent.be/international-training-and-education/contact/sinrem/0/application>



Applications for admission to the programme for the academic year 2017–2018 will open at the beginning of November 2016. Academic admission is required before starting the programme. It will be granted based on the admission requirements and an evaluation by the SINReM Management Board. During the application process, it is within the responsibility of the candidate to provide documents to show that they meet the admission requirements.

Successful candidates will receive a letter of admission, signed by the Registrar of Ghent University, in the name of the SINReM consortium. Detailed information on the procedure and the application form will be available then. If you wish to receive further information, contact us via: [applications.itc@ugent.be](mailto:applications.itc@ugent.be).



<http://sinrem.eu>



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**RawMaterials**  
Connecting matters



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