The degree programme “Metallurgical Engineering” comprises the fields of metals and mineral materials, their production, processing and recycling. The academic studies include many practical experiences since they are accompanied by small group exercises, hands-on trials and excursions. Essentially, the studies are arranged as a six semester long bachelor’s study and a continuing four semester long master’s study. The bachelor’s study gives aid to orientation for the major field, which has to be chosen during the master’s study.

Academic knowledge is deepened during the master’s study so that graduates are self-dependently capable to compile and solve complex problems. The scientific qualification is achieved by five exam-blocks: mutual obligatory area, elective secondary major and NTS (non-technical subject), major and minor field of study and master’s thesis.

The major field “Metallurgical Process Technology and Recycling of Metals” at IME with the focus on the subfield “Refining Processes of Non-Ferrous Metals” is one of nine possible major fields. In the two main courses, “Thermal Refining Processes of Non-Ferrous Metals” and “Thermal Refining Processes of Non-Ferrous Metals” individual process engineering stages of metallurgical processes, their theoretical basics and details of the technical plants are presented. Selected process lines from the ore or secondary raw material to semifinished products determine the fiscal point of the basis education. Lectures, exercises, seminars and practical courses define equivalently the training scope and are (like bachelor’s study and master’s thesis) orientated towards up-to-date topics from industry and research projects.

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Our Service

- Electrical arc furnace metallurgy
- Hydrometallurgy and applied electrochemistry
- Vacuum and inert gas metallurgy
- Microwave supported metallurgy
- Recycling of metal containing residues
- Pyrometallurgical refining technology
- Process technology of complex alloys

Service

- Chemical analysis
- Energy balances and material flow analysis
- Process modelling and process simulation
- Technical advice and survey
- Studies to the state of the art
- Literature research

Education

- Bachelor or Master of Science of Metallurgical Engineering with focus on pyrometallurgical and hydrometallurgical process technology of the non-ferrous metals such as aluminium, copper, titanium, lead and zinc in consideration of resource efficiency during primary and secondary metal production.

Postgraduate Education

- For professionally experienced engineers with focus on new metallurgical technologies

Our Strengths

- Process development for metal production and metal recycling
- Applied electrochemistry of metals
- 750 m² laboratory and pilot plant area
- Extensive specialized library
- Practice oriented education and training of engineers
- Close collaboration with industrial partners
- Interdisciplinary projects using the research periphery of Aachen and the region

Our Customers

- Students and graduates
- Industry and associations
- Public research organisations

Our Targets

- Customer satisfaction through high-quality services
- Establishment as european center of excellence in non-ferrous metallurgy
- Continuous enhancement of our know-how and research areas
Engineers provide technological progress and therefore ensure the basis of prosperity that has become self-evident to us. No mobile phone, no computer, no racing car, no space shuttle, no high speed train can be manufactured without using modern metallic materials able to meet the ever increasing requirements.

Here lies the chance for engineers in metallurgy and materials technology. At the beginning of a material’s life cycle it is their job to design, develop, optimize and adapt low-cost technologies which present the challenge of our profession. Here lies the chance for engineers in metallurgy and materials technology. Apart from the commodities aluminum, copper, zinc and lead, more than 40 other non-ferrous metals are constantly gaining significance in the industry. This is how, for example, titanium, magnesium, lithium, niobium, vanadium, chromium, silicon, palladium, nickel, platinum or rare earth elements find their way into the key manufacturing areas automotive, aerospace, communication and engineering technology. The field of process metallurgy and metal recycling incorporates a large number of methods and techniques such as chemical and physical processing, recycling, production technologies and information technology and more. It is this team work, which presents the challenge of our profession.

As a metallurgical graduate you have excellent career opportunities. Metallurgists are well-paid executives in the metal industry, plant engineering, consulting companies and other industries. Metallurgical processes and their products are a significant basis for the development and prevention and follow-up environment protection of resources and materials. Reflecting upon global resources, energy consumption and economic recovery of metals from scrap residues. Low-cost technologies must be employed for the selective processing of resources and materials. Gas and vacuum technologies are used to produce titanium, niobium, tantalum, chromium and (Pressure) Electro Slag Remelting Furnace (ESR).

As a project manager the process metallurgist finds himself itself in a broad field of activities which combines many technical disciplines such as mechanical and electrical engineering, chemistry and information technology and more. It is this team work, which presents the challenge of our profession.

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