

JEAPT

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The first year of the master program in Electrochemistry and Electroplating

Sought-after experts – the Technische Universität Ilmenau (TU Ilmenau) offers a master program in Electrochemistry and Electroplating.

Being a small but well-established university located in the centre of Germany, the TU Ilmenau is widely known for its combination of a high standard of training, a convincing campus and a personal atmosphere, thus representing a very pleasant and attractive place of study.

One year ago, the university extended its rich and mainly engineering-oriented profile by a new master program in Electrochemistry and Electroplating (four semesters), behind which there is a whole industry represented by the Central Association of Surface Engineering. The master course aims to develop highly qualified professionals as junior staff for the electroplating and surface treatment industry...

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Campus view - Technische Universität Ilmenau. © ari

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The program with a Master of Science degree addresses prospective students who wish to specialize in the fields of Electrochemistry and Electroplat-

ing. Ideally they have already successfully completed a Bachelor degree in materials science or a comparable study program in the area of engineering or natural sciences.



Study with excellent prospects at the Technische Universität Ilmenau. © TU Ilmenau

Program content defined by current industry issues

As an interdisciplinary science with relevance to chemistry, physics and materials science, electrochemistry answers numerous frequently asked questions - electrochemical processes are a ubiquitous part of our lives. Therefore, a comprehensive understanding of electrochemical processes is a declared study objective of this master program.

Coatings are a fixed part of our everyday lives, too. Highly developed and specially adapted products are needed for instance in the automotive industry (for corrosion and wear protection), in electrical engineering and electronics technology or in medical engineering (for devices with functional surfaces like surgical instruments).



Hightech coating systems are also used within configuration of bathrooms, furniture and home appliances. © ZVO

The education profile of the master program Electrochemistry and Electroplating is strongly based on the demands of the electroplating and surface industry. Students receive profound expertise in the technology fields of “Electrochemical Surface Technology” and “Electrochemical Energy Storage and Conversion”. The Technische Universität Ilmenau works closely



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Research focus

As it is the case with all master courses offered at the Technische Universität Ilmenau, the master program Electrochemistry and Electroplating has a strong research orientation. The Electrochemistry and Electroplating Group (who are mainly responsible for the program) processes a wide range of research and development topics which master students may actively shape, e.g.:

- New material coatings – for instance for the aerospace industry
- Novel composite materials - for instance for improved corrosion and wear protection
- Future energy storage - liquid metal batteries, vanadium redox flow batteries, lithium ion batteries, water electrolysis

Even the international perspective of the program is excellent – internships or the master thesis may be accomplished at foreign partner institutions and become recognized afterwards.



With new technologies for energy storages and convert the Electrochemistry makes an important contribution to a sustainable and resource-saving energy supply. © istockphoto.com/alxpin

Successful start with attractive prospects

Five students started the program in autumn 2013 – today they are more than satisfied with their decision. And Professor Andreas Bund, academic advisor of the program, is pleased with the high motivation of his students and the resulting positive study outcomes. Around ten new students are expected to register for the program in this winter semester, in perspective a group of 20 students are likely to register in each academic year.

The prospects are excellent. Graduates face exciting tasks to be solved in a variety of industrial

sectors, such as medical engineering, automotive industry and telecommunications as well as in future fields like sustainable energy supply or electromobility. Job examples for graduates of this master program are:

- Process and technology development and optimization of powerful and sustainable coating technologies
- Testing and optimization of corrosion- and wear-resistant layers
- Technology development for energy storage and conversion

Even now, one year before they will receive their master degree, the prospective graduates become courted by potential employers.

What do students say:

Theresa Schötz, master student Electrochemistry and Electroplating in her third semester

How did you become aware of the new program?

After my Bachelor degree in Chemical Engineering, I wanted to become involved in the field of physical chemistry more strongly, especially in electrochemical topics like energy conversion, full cells or renewable and resource-saving energies. Since my former university did not offer this specialization, I checked other course offers. This master program was my favourite from the very beginning because it is exactly what I wanted to do.

How was your first year of study?

We are a small group of students, therefore we profit from a very good and familiar working atmosphere. The content of this master pro-

gram is very special but nevertheless demanded in almost all natural and engineering areas. I'm quite satisfied with my decision and enjoy what I'm doing!

What kind of job would you like to do after the program?

I would prefer a job in R&D, either for working on full cells or energy conversion in general. Even for my master thesis that I am writing next year at the Hokkaido University in Japan, I will take up a special full cell topic.

Mirko Ante, master student Electrochemistry and Electroplating in his third semester

How did it come that you took up a study here in Ilmenau and registered for this master program?

Before I came here, I had studied Advanced Materials at the university in Gießen. I wrote my Bachelor thesis in quite a big battery-manufacturing company, so I wanted to specialize in this direction. As far as I know, this master program with the direct focus on electrochemical energy storage is unique in Germany.

We students profit from a very good personal guidance and treatment on the side of our lecturers who respond to each student. For me, an additional stay abroad has always been very important. Here, I receive the best support to plan and prepare it. Most probably, I will write my master thesis in Japan.

How do you estimate the program from today's perspective?

The master program is quite well organized and only very little points reveal that it is completely new. Altogether I gained a lot of knowledge and

experience in the last year and got some deeper insight into the domain of surface technology, which was a complete premiere for me.

What will your future life look like after the degree?

I adhere to my vision to work in the area of R&D for new energy storage systems (batteries) or energy converters (full cells). For instance I could imagine developing batteries and full cells for alternative powertrains in the automotive industry.

Key data concerning the master program Electrochemistry and Electroplating:

Degree:	Master of Science (M. Sc.)
Study period:	4 semesters
Start:	Each winter semester (October), start in spring is possible, too
Prerequisite:	Bachelor degree in materials science or a comparable study program in the fields of engineering or natural sciences
Program language:	German
Application:	www.tu-ilmenau.de/apply

Program information:

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Professor Andreas Bund, Academic advisor of the master program Electrochemistry and Electroplating. © TU Ilmenau

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