



UNIVERSITÄT  
BAYREUTH

Master of Science

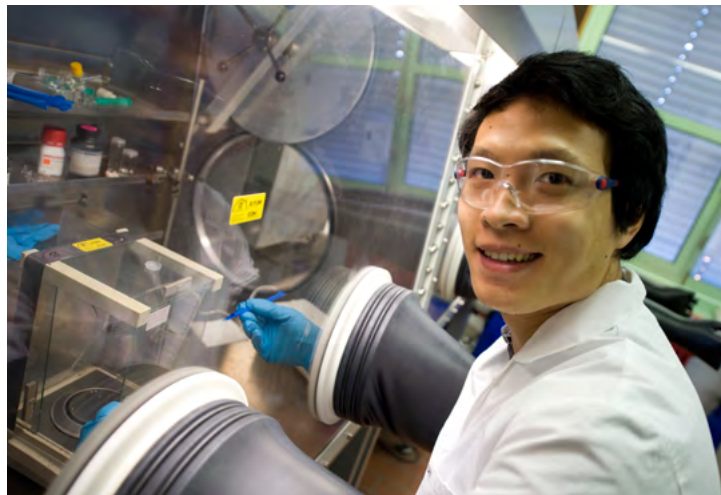
# Environmental Chemistry

*Research-led teaching that is  
interdisciplinary, international, and individualized*





*Environmental Chemists investigate air pollution, greenhouse gas emissions, or contamination of soil, water, and plants.*



*A strong practical focus and research-led teaching in small groups enable hands-on experience of front-end analytical techniques and development of solution-oriented thinking and creativity.*

## An outstanding education geared towards key global challenges.

Environmental Chemistry addresses today's global challenges caused by increasing industrialization and over-exploitation of natural resources. Contamination is not restricted to one compartment (air, soil, or water), but affects whole ecosystems and often has a considerable political dimension. The key to future sustainable resource management, current impact prediction, and prudent cleanup of past contaminated sites is a solid understanding of Environmental Chemistry.

Environmental Chemistry at the University of Bayreuth is organized by the research groups for Atmospheric Chemistry, Environmental Geochemistry, Experimental Biogeochemistry/Microbiology, Hydrology/Hydrochemistry, and Soil Ecology/Soil Chemistry. The lecturers are internationally renowned experts in their fields and have an excellent international network.

## Fit to fight pollution.

In the two-year master's programme, you learn to address global environmental chemical challenges with knowledge, skills, and experience from an application-oriented and strongly interdisciplinary perspective. Aside from the core understanding of processes in air, soil, and water, subjects include inorganic and organic chemistry, microbiology, toxicology, ecosystem analysis, and human-environment interactions. Exercises in small groups will train your scientific but also organizational and time management skills. You are trained in critical reflection, abstraction, and logical argumentation as well as oral and written communication. Different perceptions of environmental challenges by students from different countries at different stages of development and with different cultural and socio-economic backgrounds are integrated to sharpen understanding of international contexts.



The demand for highly qualified experts in environmental chemistry will continue to grow with increased industrialization and ever-tighter global interdependence and integration.

## Attractive career perspectives.

Our graduates will have various attractive career opportunities in the academic sector, in the industry (experts and consultants of national and international companies, heads of laboratories, company founders) and in the public sector (policy consultation, development cooperation). Excellent employment opportunities also open up as communicators in developing and emerging countries with increasing industrialisation and the associated demands on know-how. Employers include

- international organizations (e.g. UN, EU, NGOs)
- national and state authorities
- sustainability departments
- consultancies
- universities and research centres

### Module overview (5 ECTS points per module)

60 ECTS

#### Environmental Compartments: Air

- Atmospheric Chemistry / Organic Pollutants L
- Atmospheric Chemistry Research Project TP S
- Air Pollution S

#### Environmental Compartments: Soil

- Soil and Terrestrial Biogeochemistry I L
- Soil and Terrestrial Biogeochemistry II L TP
- Soil Pollution L

#### Environmental Compartments: Water

- Aquatic Geochemistry L TP
- Inorganic and Organic Contaminant Hydrology L S
- Biogeochemical Methods in Hydrology L TP

#### Chemistry and Analytics

- Geochemical Modeling TP
- Analytical Chemistry and Inorganic Pollutants L TP
- Mass Spectrometry TP S
- Environmental Toxicology, Health, and Forensics L S
- Field trip: Challenges and solutions in Germany

#### Experimental Biogeochemistry & Microbiology

- Environmental Microbiology L TP S
- Analytical Microscopy Project L TP

#### Isotope Biogeochemistry

- Stable and Radioactive Isotopes L TP

### Methods and Skills

15 ECTS

- Scientific Writing and Symposium S
- Research Module TP
- Seminar Global Challenges, Research Plan S

### To further define your specific profile

15 ECTS

- Elective or Internship

### Master's Thesis

30 ECTS

L = Lecture, TP = Tutorial/ Practical Course,  
S = Seminar

Total 120 ECTS



*An individualized programme of study, a tight-knit community, and a low student-to-instructor ratio ensure an environment conducive to intellectual and personal growth.*

## Interested?

We welcome applications from graduates who have a strong interest in interdisciplinary environmental challenges in an international context and who are prepared to undertake rigorous training and to profit from the team spirit of an open, international environment. Students must hold a Bachelor of Science (BSc) degree with at least 20 ECTS points in physics, biology, or chemistry, 20 ECTS points in environmental sciences, and an overall grade of at least 2,5 on the German grading scale. A very good command of spoken and written English (equivalent to CEFR step C1 or higher) is mandatory.

**The application deadline is the 15th of July.**

**Start Date: Winter Semester (mid-October)**

Please visit our website for more detailed information about the degree programme and the application process.

[www.environchem.uni-bayreuth.de](http://www.environchem.uni-bayreuth.de)



*At the University of Bayreuth, you will find a wide range of opportunities for international exchange and focused research.*

## The University of Bayreuth.

The University of Bayreuth is currently rated among the top young universities according to the Times Higher Education global ranking "100 under 50". This ranking focuses on the top 100 universities worldwide which were founded less than 50 years ago. As a medium-sized campus university, we place less emphasis on growth and more on ensuring the highest quality of our infrastructure. In so doing, the University of Bayreuth focuses on the areas of emphasis in the various disciplines and on developing a range of interdisciplinary links that ensure it a place among the best universities internationally. Environmental Research has a long-standing tradition in Bayreuth. About 25 research groups are organized in the Bayreuth Center of Ecology and Environmental Research ([www.bayceer.uni-bayreuth.de](http://www.bayceer.uni-bayreuth.de)), which provides unique opportunities for national and international students.



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