**International Internship**
- Start your first international research project
- Visit one of the world's top institutes in the fields of molecular sciences, spectroscopy, and simulation
- Publish your first scientific paper together with internationally recognized top researchers
- Gain international experience at a very early stage in your career
- Earn leadership qualities in multicultural, interdisciplinary, high profile research teams
- Your internship will be organized and co-financed by the university

### Our excellent Research Network:

**Institution**
- Ruhr-Universität Bochum
- University of California Berkeley, USA
- University of California Los Angeles, USA
- Cornell University, USA
- Ecole Normale Superieure Paris, France
- ETH Zürich, Switzerland
- Indian Institute of Science Bangalore, India
- Indian Institute of Technology Kanpur, India
- National Institutes of Natural Sciences, Japan
- Purdue University, USA
- University of Pennsylvania, USA
- Radboud University Nijmegen, The Netherlands
- University College London, UK
- University of California Irvine, USA
- University of Cambridge, UK
- University of Illinois at Urbana Champaign, USA
- University of Nottingham, UK
- Seoul National University, Korea
- Weizmann Institute of Science, Israel
- University of Vienna
- Yale University

**Main Destinations close by**
- Düsseldorf 0.5 hours
- Cologne 1 hour
- Berlin 4 hours
- Amsterdam 3 hours
- Brussels 3 hours
- Luxembourg 3 hours
- Paris 6 hours
- Prague 7 hours
- North Sea 3 hours

**Solvation Science @ RUB**
Solvation Science @ RUB provides a unifying framework for understanding and predicting solvent processes at Ruhr-Universität Bochum.

www.solvation.de
iMOS
International Master Molecular Sciences – Spectroscopy and Simulation

iMOS offers you the unique chance to acquire and to apply in practice cutting-edge skills in theoretical and spectroscopic techniques in the fields of molecular chemistry, biochemistry, and physics.

Plan ahead:
▪ The Master’s Program takes two years
▪ The teaching language is English
▪ Study within a very active, interdisciplinary research environment
▪ Work together with top researchers in their field
▪ Early hands-on experience in high-profile research
▪ Spend three months on an international internship
▪ Qualify for your funded doctoral thesis in Germany
▪ Fast-track option for outstanding students: Start your doctoral work after only one year

Apply now:
▪ Online application: www.rub.de/imos by JULY 31st
▪ Submit your academic certificates
▪ If you are not a native speaker, file your English language certificate

Get ready:
▪ Talk to our course advisors for further guidance
▪ Get your visa
▪ Course start: October

Who should apply?
Bachelor students in
▪ Chemistry
▪ Physics
▪ Mathematics
▪ Bio-Chemistry
▪ related Engineering fields

We are looking for students who have a passion for science and wish to work in an international environment.

What skills should you have?
This is a highly competitive program relying on your skills in quantum mechanics, mathematics, physics, and chemistry. You should have already learned:
▪ Schrödinger’s equation and wave functions
▪ Hamilton operator
▪ Real and complex valued vector spaces, matrices
▪ Basis set transformations, partial differentiation
▪ Integration over arbitrary dimensional space
▪ Basic statistical entities like distributions, averages, data regression and hypothesis tests.

Basic knowledge of concepts of classical mechanics and thermodynamics/statistical mechanics is mandatory.

What we offer:
▪ Comprehensive student support
▪ Guaranteed housing
▪ Full-time student benefits
▪ German and English language courses
▪ Three-month international internship
▪ 2nd year: opportunity to apply for paid scientific student jobs
▪ Possibility to start a paid Ph.D. study after Master
▪ Active research environment with internationally renowned scientists
▪ Full assistance in study and research

What is the iMOS Curriculum (120 CPs*)?
1st Semester (28 or 33 CPs)
▪ Concepts of Quantum Mechanics**
▪ Statistical Physics and Thermodynamics**
▪ Dynamics and Simulation (+ Practical)
▪ Concepts of Spectroscopy 1 (+ Practical)
▪ Concepts of Molecular Chemistry 1
▪ Biophysical Simulation**

2nd Semester (28 or 33 CPs)
▪ Electronic and Molecular Structure Theory (+ Practical)
▪ Concepts of Spectroscopy 2 (+ Practical)
▪ Theoretical Spectroscopy
▪ Concepts of Molecular Chemistry 2**
▪ Methods of Structural Analysis**
▪ Fundamentals of Magnetic Resonance**
▪ Scientific Programming Methods for Chemists**

3rd Semester (28 CPs)
▪ Hands-on training in a research group of your choice
▪ International Course (three-month internship)

4th Semester (30 CPs)
▪ Master’s Thesis

*: CPs means credit points
**: Three of seven elective courses are required for graduation.

Work Perspectives
Germany is one of the world’s leaders in applied optical technologies, chemistry and pharmacy. There exist excellent opportunities for alumni with a top-level education and training in spectroscopy and microscopy, as well as simulation techniques.