Learning how to make discoveries that will contribute to a better understanding of the fundamental behaviour of molecules and materials

Most chemical research involves synthesising and characterising new molecules, a trial and error method. This specialisation goes one step further: it aims at fundamentally unravelling the properties of molecules and materials. Therefore, you'll not only get an extensive theoretical background but also participate in advanced spectroscopic experiments.

Why study this specialisation at Radboud University?

• Radboud University hosts a large number of advanced spectroscopic facilities. As a Master’s student, you’ll get the chance to work with devices that are unique in Europe and even some that cannot be found anywhere else in the world.
• All physical and chemical Material Science departments are combined in the Institute for Molecules and Materials (IMM). Therefore, collaborating is second nature to us.
• We have multiple collaborations with companies ranging from multinationals (AkzoNobel, DSM, Shell, Teijin) to start-ups, where Master’s students can perform their internships.
• You’ll meet a wide group of researchers in a small-scale and personal setting: a good starting point for your future network.
Programme outline (2 years, 120 EC)
The programme of this specialisation depends on the Master's that you follow: Chemistry or Science.

Chemistry | Science
---|---
Compulsory courses (15 EC) | Compulsory courses (15 EC)
Specialisation electives (12 EC) | Specialisation electives (6 EC)
Free electives (6 EC) | Free electives (6 EC)
Philosophy elective (3 EC) | Philosophy elective (3 EC)
Internship (54 EC) | Internship 1 (39-54 EC)
Minor programme (24 EC) | Internship 2 (30-45 EC)
Literature thesis (6 EC) | Literature thesis (6 EC)

Courses
Below you can find an overview of the compulsory courses and some examples of electives. Please have a look at the online prospectus (see 'More information') for more detailed information.

Compulsory courses
- Advanced Spectroscopy (6 EC)
- Materials Science (3 EC)
- Physical Chemistry of Molecular Aggregates (3 EC)
- Molecular Modelling (3 EC) and/or Quantum Chemistry (3 EC)

Examples of specialisation electives
- Graphene (6 EC)
- Interaction of Light with Molecules and Materials (6 EC)
- Molecular Physics (6 EC)
- Energy and Climate (6 EC)

Research internship
During your internship(s), you can specialise in the materials and research methods of your interest. A selection of research groups at Radboud University for this specialisation are:
- Solid State NMR and Biophysical Chemistry (ru.nl/science/solidstatenmr)
  > Prof. Arno Kentgens
- Theoretical Chemistry (theochem.ru.nl)
  > Prof. Gerrit Groenenboom
- Molecular and Biophysics (FELIX laboratory) (ru.nl/felix)
  > Prof. Jos Oomens

Most students choose to perform their first internship in Nijmegen, and their second internship or minor programme – which consists of courses and/or an internship – externally. We encourage you to explore your future career opportunities: specialise in a specific theme at another university, go abroad or propose your own research question to a company or governmental organisation. For suggestions, you can always contact a lecturer or the student advisor (see 'More information').

Your advantages on the labour market
About 75 percent of our students start their career with a PhD position. At Radboud University we offer about ten PhD positions in Physical Chemistry every year. Most students end up as researchers, policy advisors, consultants or managers in companies and governmental organisations. Graduates have found jobs at MIT, UC Berkeley, ASML, AkzoNobel, DSM, Shell, and Unilever.

Admission requirements
You are required to have a Bachelor’s degree in Chemistry, Science, or a closely related discipline. You must also have a sufficient proficiency in English. Students from a University of Applied Sciences (HBO) need to follow a minor or pre-Master’s in Chemistry. Other additional deficiency programmes are tailor-made. For details, please visit the website or contact the student advisor (see 'More information').

Application procedure
The programme starts in September. The application deadline is 1 April for students from non-EU/EEA countries and 1 May for students from within the EU/EEA.

You apply for the Master’s programme in Chemistry or Science via www.studielink.nl. After admittance to the Master’s programme, you can enrol for the specialisation in Physical Chemistry.

>>> More information

Prospectus: www.ru.nl/prospectus/sciencefaculty

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