About TU/e:

- Best Dutch university in Times World University Rankings 2010
- 8500 students, PhD's and PDEng's
- Open and friendly atmosphere
- Personal contact with lecturers and staff
- More than 70 nationalities present
- English spoken everywhere in the Netherlands
- Brainport Eindhoven: the world's most intelligent community 2011
- TU/e students in high demand among employers

More information about this Graduate Program and about ICMS
Sagitta Peters MSc - Business Manager and Graduate Program Coordinator
tel. +31 (0)40 247 2482
email: s.peters@tue.nl
www.tue.nl/icms

More information about TU/e, admission and enrollment
Education and Student Service Center
tel. +31 (0)40 247 4747
e-mail: io@tue.nl
www.tue.nl/graduateprograms

PhD program

Each student participating in the ICMS PhD program is appointed in one of the TU/e departments. To reflect the interdisciplinary nature of the program, PhD students have a second supervisor whose expertise complements that of the advisor/first supervisor. Each student will write a proposal for his/her PhD research.
The research is based on the student's project proposal and fits one or more research groups participating within ICMS. The education is both research related and aims to strengthen scientific skills. Participants will take part in the teaching of ICMS or its related groups and will guide BSc or MSc students. In the third year we focus on training the writing of proposals (e.g. NWO, European Commission Marie Curie) to stimulate a further career in research. During the full period, intensive coaching by the advisor and supervisors is provided. The duration of the PhD program is 3.5 to 4 years.

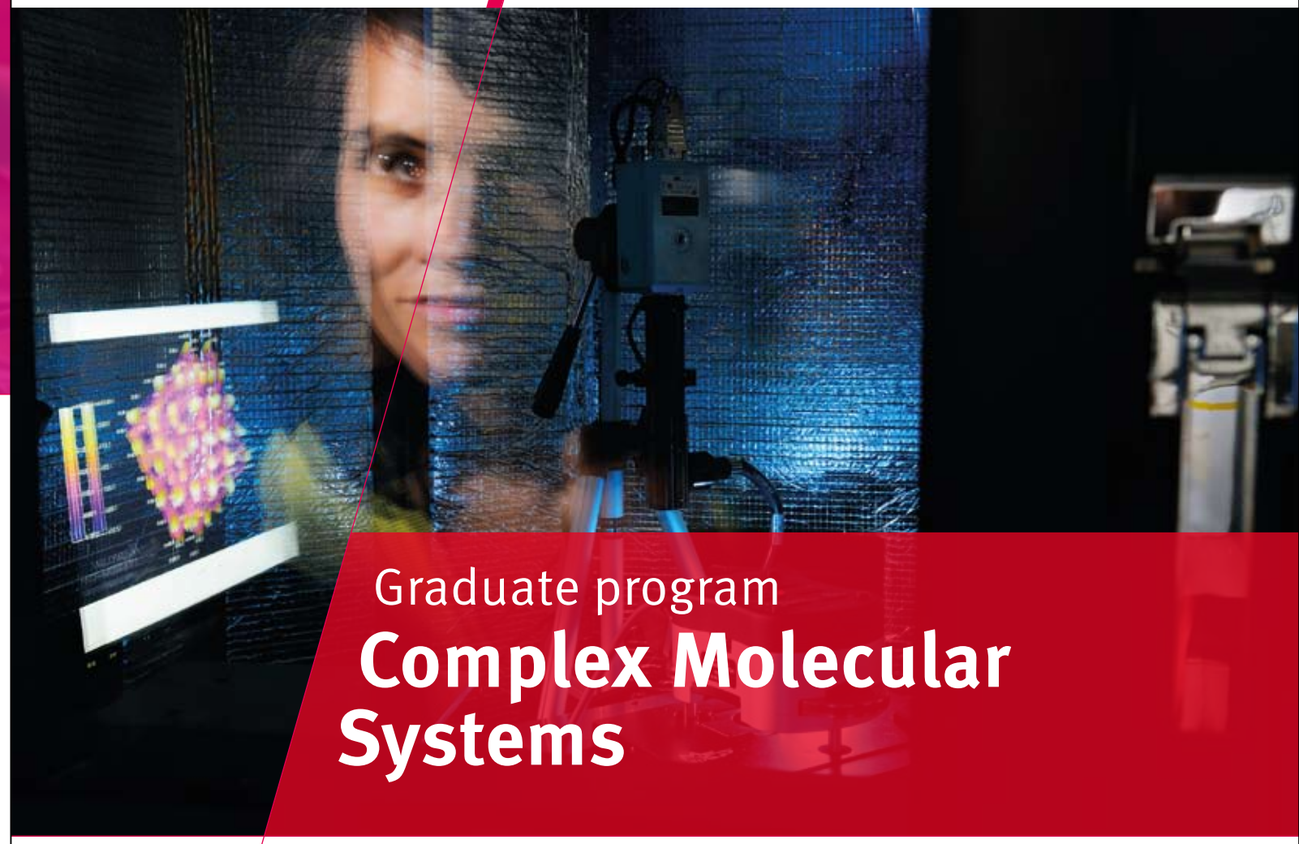
Admission requirements for the PhD program
MSc students participating in the graduate program can continue within the PhD program after successfully completing the MSc Program (good grades and positive feedback from their undergraduate project supervisor). Master students from outside the Complex Molecular Systems graduate program can submit a formal application for a PhD position within the PhD program. The selection is based on:
- The student's PhD research proposal written at the end of the MSc program
- The grades (minimum average 8 of 10) obtained in the MSc program (and in the ICMS MSc supplementary program when being part of it)
- Motivation letter
- Feedback from the research groups in which the student performed the undergraduate project

PhD program facts
- Degree: Doctor of Philosophy (PhD), from the Department in which the student is formally appointed
- Language: English
- Times of entry: Preference for September and February
- Duration: 4 years. In combination with the MSc program a total intended duration of five and a half years
- Evaluation moment: Go/no-go decision after one year
- Departments involved: Applied Physics, Biomedical Engineering, Chemical Engineering and Chemistry, Mechanical Engineering, Mathematics and Computer Science
- www.tue.nl/graduateprograms/cms

Application for the MSc or PhD program
To apply for the Complex Molecular Systems graduate program, please send a motivation letter, curriculum vitae, BSc phase grades (when applying for the MSc program) or MSc phase grades (when applying for the PhD program) to the program coordinator.

www.tue.nl/graduateprograms

TU/e Technische Universiteit **Eindhoven** University of Technology



Graduate program

Complex Molecular Systems

Science is changing. We see it all around us - today's breakthrough studies happen at and across the boundaries of traditional disciplines. They involve multidisciplinary teams, techniques and insights. Modern science is increasingly less about individual objects (molecules, computers or people) and more about understanding the functioning of such objects within their context, one that is shaped by the complex environment created by interactions among large assemblies. Biological molecules evolve as actors in complex biochemical pathways that rule the living world. Computers collectively make up the internet. Large interacting collectives of human beings organize themselves into complex social and other network-like structures that steer anything, from the spread of disease to crowd behavior and erratic trends in financial markets.

What are these rules, interactions and patterns? What are their origins, and how do they structure our world across the vastly different length and time scales we encounter? How may we characterize the collective behavior that they result in? These are the questions that science must address, today and tomorrow. They are the questions of complexity, and they are the questions for which the Institute for Complex Molecular Systems (ICMS) was created.

To operate successfully in this field, a new breed of scientists is needed. Smart, critical, curious and with a strong background in one particular discipline. But to tackle the real questions, these scientists need to be able to function effectively in interdisciplinary settings. That requires a shared understanding of the foundations of complexity – the relationships between micro and macro in different disciplines along with an intimate familiarity with the possibilities and limitations in these scientific fields.

Where innovation starts

The Institute for Complex Molecular Systems seeks to force major breakthroughs by facilitating interdisciplinary research, and by training the next generation of young students and scientists to be prepared for tomorrow's scientific world. A strong disciplinary foundation is complemented with the ability and knowledge to work in interdisciplinary teams on topics in complexity. We do not favor one field over the other, nor do we place special emphasis on theory or experiment. They are all sides of the same coin - this combination of specialists in experiment and theory is quite unique.

How can you contribute?
We need the best of the best in all scientific disciplines. No matter if you are a chemist or a nanotechnologist, a mathematician or a biologist, a structural engineer or a physicist.
Fundamental and applied science operating side-by-side with the shared goal of understanding and creating complex functional objects – this is our dream. What sort of functional objects? We are working towards an artificial cell, synthesizing biomaterials that cannot be distinguished from human tissue, and we're developing the next generation of catalysts for renewable energy. But there is so much more in the search for new technologies through molecular complexity.

This leaflet tells you about the contents, research profile, organization, selection criteria and application procedure for the Complex Molecular Systems graduate program. Contact us if you need more information or if you are interested in joining us!

Within the Complex Molecular Systems graduate program, the following programs are available:

Graduate program
Complex Molecular Systems:
- Master program
- PhD program

Graduate program

Complex Molecular Systems

The Complex Molecular Systems graduate program offers outstanding MSc and PhD students a challenging and coherent interdisciplinary program aiming for a career in research in combination with a strong focused background in one of the TU/e departments. The program is built on the strengths of ICMS and the related departments, and offers interdisciplinary training with a special focus on developing academic skills. We combine the strengths of our departmental educational system with the challenges of interdisciplinarity. MSc and PhD students are part of the highly reputed research groups of ICMS staff members. Their training as independent scientists is reinforced in pursuit of an academic career. Admission to the MSc or PhD program is based on a selection procedure. A PhD position within the program is available for every successful MSc student. PhD students have a large degree of freedom in choosing their research topic and supervisor.

All participants in this program also follow a specialized MSc or PhD program in one of the TU/e departments. The Complex Molecular Systems graduate program was selected by the Netherlands Organisation for Scientific Research (NWO) as one of the ten participants of the NWO Graduate Program 2010, receiving a grant of 800,000 euros.

Master program

The Master program is based on an interdisciplinary approach, combined with a strong disciplinary foundation and there is a firm focus on the challenges that lie ahead of us. This interdisciplinarity is reflected in the program in various ways. In addition to the course load of the departmental Master program, the Complex Molecular Systems Master program offers supplementary courses to help you place complexity problems in their multidisciplinary context. This additional program consists of a study load of 30 credit points (cp) according to ECTS:

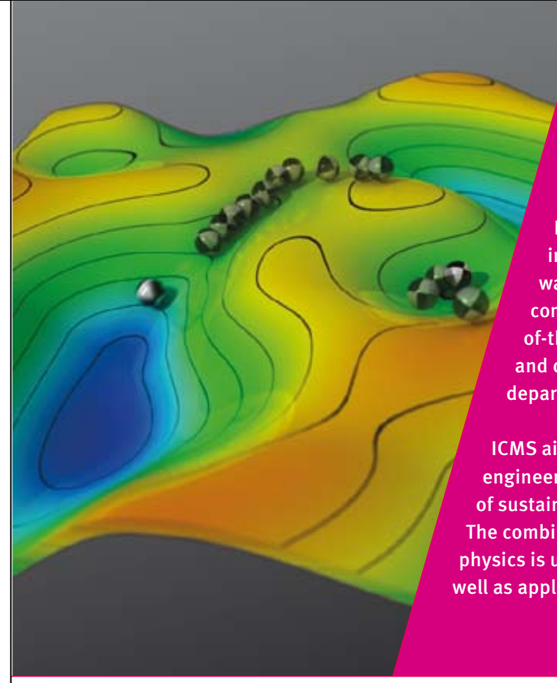
15 cp	Courses in fundamentals of complexity (see website for a list of courses)
10 cp	Rotation: a research project which involves several complementary research groups. The rotation provides insight into the chain: theory - modeling - synthesis - engineering
5 cp	Scientific skills

In addition to the 30 credit points, students need to perform their undergraduate project with one of the staff members of ICMS (see website for an overview of ICMS staff members). Students have an active role within the ICMS community and are expected to participate in meetings and workshops, attend lectures, and have close contact with all (senior) scientists and staff. A successful MSc program results in access to the Complex Molecular Systems PhD program. Quite a unique feature of the MSc program is that you follow part of the PhD at the same time, thereby reducing the length of the PhD program.

Each student will follow a departmental TU/e MSc program, on which you will build up the interdisciplinary understanding. Participating departments are:
- Department of Applied Physics (e.g. theory of soft matter, molecular biosensors)
- Department of Biomedical Engineering (e.g. biomaterials, tissue engineering, biomodeling and bioinformatics)
- Department of Chemical Engineering and Chemistry (e.g. supramolecular chemistry, functional organic materials, heterogeneous catalysis, microfluidics)
- Department of Mechanical Engineering (e.g. polymer technology, soft matter)
- Department of Mathematics & Computer Science (e.g. applied analysis, probability and statistics)

Admission requirements for the Master program
Only highly talented students will be admitted to the program. A personal interview will be part of the selection procedure. The selection will be based on:
- Grades in the BSc phase (minimum average 8 of 10)
- Demonstrated multidisciplinary interest
- Ambition to follow a PhD program
- Excellent communication skills and fluency in spoken and written English
- Admission to a TU/e Master program in one of the departments

Master program facts
- Study possibilities: This Master program supplements a full-time MSc program in one of the TU/e departments
- Degree: No degree other than the MSc degree of the department. ICMS will present a certificate which indicates the additional study load and relevance of the program
- Language: English
- Times of entry: September and February
- Duration: Two years (120 + 30 = 150 cp). In combination with the PhD program the total intended duration is five and a half years
- Departments involved: Applied Physics, Biomedical Engineering, Chemical Engineering and Chemistry, Mechanical Engineering, Mathematics & Computer Science
- www.tue.nl/graduateprograms/cms



Research profile of the Institute

The Complex Molecular Systems graduate program is part of the TU/e Institute for Complex Molecular Systems (ICMS). This interdisciplinary institute for research and education in the area of molecular complexity was officially established in April 2008. The institute aims to create complex, functional objects based on novel engineering tools and state-of-the-art modeling. ICMS brings excellent researchers from different areas and departments together to promote the cross-fertilization of ideas across departments and disciplines.

ICMS aims to effect widely recognized scientific breakthroughs in the engineering of complex molecular systems. We focus on applications in the area of sustainability, energy efficiency, soft biomaterials and functional materials. The combination of expertise in chemistry and biology, engineering, and theory and physics is unique in the Netherlands and guarantees fundamental understanding as well as application in functional systems.