

CHEMICAL PHYSICS (CHPH)

Graduate Degree Program
College: Computer, Mathematical, and Natural Sciences

Abstract

The Chemical Physics Program is a program of study and research leading to Master of Science and Doctor of Philosophy degrees for students who wish to enter professional careers requiring an in-depth knowledge of both physics and chemistry. Students can choose research topics across many disciplines including biophysics, chemistry, physics, chemical engineering, electrical engineering, materials and nuclear engineering, mechanical engineering, and meteorology.

The Chemical Physics Program is designed for students with undergraduate degrees in physics, chemistry, or engineering who are sufficiently well prepared in mathematics and the physical sciences to undertake graduate training in physics and physical chemistry. Formal course offerings in quantum mechanics, quantum chemistry, spectroscopy, thermodynamics, electricity and magnetism, statistical mechanics and biophysics prepare a student to explore the broad range of research topics at the University of Maryland. Research areas of the Chemical Physics faculty include: the study of single molecules as well as gases, surfaces, solids and polymers by means of laser-light, electron scattering, and nanomicroscopies; the study of dynamic phenomena from atom-molecule collisions to protein-folding and hydrodynamics; thermodynamics from phase transitions and critical phenomena to combustion; the statistical mechanical theory of phase transitions, fluid dynamics and non-equilibrium phenomena; the quantum mechanical theory of molecules and molecular dynamics; atmospheric physics and chemistry; and biophysics.

The Chemical Physics Program is sponsored by the Institute for Physical Science and Technology and seven academic departments: Chemistry and Biochemistry, Physics, Electrical and Computer Engineering, Chemical Engineering, Materials and Nuclear Engineering, Mechanical Engineering, and Meteorology. Formal arrangements with the National Institute of Standards and Technology (NIST) and the National Institute of Health (NIH) allow students to perform research off campus under the supervision of a government scientist associated with the program and a Chemical Physics faculty member. The Chemical Physics Committee oversees the program and is made up of representatives from the sponsoring units with the Program Director as chair. The Chemical Physics Program Office administers the program and is affiliated with the Institute for Physical Science and Technology. A booklet describing Chemical Physics at Maryland, College Park, can be obtained from the Chemical Physics office upon request.

Financial Assistance

Teaching and research assistantships are available for qualified students. There are also University and Chemical Physics Fellowships available.

Contact

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Website: <http://www.chemicalphysics.umd.edu>

Courses: CHPH (<https://academiccatalog.umd.edu/graduate/courses/chph/>)

Admissions

The program is for students with undergraduate degrees in chemistry, physics or engineering. For those students with degrees in other disciplines, knowledge of calculus, differential equations, and vector algebra, as well as introductory mechanics, electricity and magnetism, and quantum mechanics is ordinarily expected.

General Requirements

- Statement of Purpose
- Transcript(s)
- TOEFL/IELTS/PTE (international graduate students (<https://gradschool.umd.edu/admissions/english-language-proficiency-requirements/>))

Program-Specific Requirements

- Letters of Recommendation (3)
- Graduate Record Examination (GRE)
- CV/Resume
- GRE Subject
- Description of Research/Work Experience

For more admissions information or to apply to the program, please visit our Graduate School website: www.gradschool.umd.edu/admissions (<http://www.gradschool.umd.edu/admissions/>)

Application Deadlines

Type of Applicant	Fall Deadline	Spring Deadline
Domestic Applicants		
US Citizens and Permanent Residents	15 Jan	15 Dec
International Applicants		
F (student) or J (exchange visitor) visas; A,E,G,H,I and L visas and immigrants	15 Jan	25 Sep

Other Deadlines: Please visit the program website at <http://www.chemicalphysics.umd.edu>

Requirements

- Chemical Physics, Doctor of Philosophy (Ph.D.) (<https://academiccatalog.umd.edu/graduate/programs/chemical-physics-chph/chemical-physics-phd/>)

- Chemical Physics, Master of Science (M.S.) (<https://academiccatalog.umd.edu/graduate/programs/chemical-physics-chph/chemical-physics-ms/>)

Facilities and Special Resources

Incoming students are provided with private desk space and up to date computer facilities. There is a wide array of advanced equipment associated with the various research groups in the Program including scanning probe microscopes, high-resolution spectrographs, ultra-short high-power lasers, multi-coincidence electron scattering spectrometers, and a fully equipped light-scattering laboratory.