

# CHEMICAL PHYSICS (CHPH)

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

## Abstract

The Chemical Physics Program is a course of study and research leading to a Doctor of Philosophy degree 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, meteorology and quantum science, information and technology.

The Chemical Physics Program is designed for students with undergraduate degrees in Physics, Chemistry, Mathematics, 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.

The Chemical Physics Program is hosted and administered by the Institute for Physical Science and Technology, in collaboration with seven academic departments: Chemistry and Biochemistry, Physics, Electrical and Computer Engineering, Chemical Engineering, Materials and Nuclear Engineering, Mechanical Engineering, and Meteorology. The Chemical Physics Committee oversees the program and is made up of representatives (Chemical Physics faculty) from the sponsoring units with the Program Director as chair. 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.

Research areas include Atmospheric and Space Sciences; Nano, Meso, and Micro-Scale Science and Technologies; Experimental and Theoretical Atomic, Molecular and Optical (AMO) Sciences and Ultrafast Optics; Experimental and Theoretical Condensed Matter and Material Sciences; Neutron Scattering and NMR; Experimental and Theoretical Nonlinear Dynamics and Chaos; Experimental and Theoretical Quantum Science, Information and Technology – Joint Quantum Institute (JQI), the Joint Center for Quantum Information and Computer Science (QIACS) and the Quantum Technology Center (QTC); Experimental and Theoretical Statistical Mechanics, Phase Transitions and Thermodynamics.

## Financial Assistance

Students are admitted with Teaching Assistantships or Research Assistantships. University and Chemical Physics Fellowships are also available.

## Contact

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

**Courses:** CHPH (<https://academiccatalog.umd.edu/graduate/courses/chph/>) CHEM (<https://academiccatalog.umd.edu/graduate/courses/chem/>) PHYS (<https://academiccatalog.umd.edu/graduate/courses/phys/>) ENME ENMA (<https://academiccatalog.umd.edu/graduate/courses/enma/>) ENEE ENCH MATH

## ADMISSIONS

The program is for students with undergraduate degrees in chemistry, physics, mathematics, 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) (optional)
- GRE Subject (optional)
- CV/Resume
- Writing Sample (optional)
- Description of Research/Work Experience
- Supplementary Application (contact program for details)

For more information on admission, please visit the Graduate School website: [www.gradschool.umd.edu/admissions](http://www.gradschool.umd.edu/admissions) (<http://www.gradschool.umd.edu/admissions/>)

### APPLICATION DEADLINES

Type of Applicant	Fall Deadline	Spring Deadline	Summer Deadline
<b>Domestic Applicants</b>			
US Citizens and Permanent Residents	January 9, 2026 (Final)	N/A	N/A
<b>International Applicants</b>			
December 15, 2025 is the priority deadline to be considered for fellowship nominations.			

F (student) or J (exchange visitor) visas; A,E,G,H,I and L visas and immigrants	January 9, 2026 (Final)	N/A	N/A
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#### RESOURCES AND LINKS:

**Program Website:** [chemicalphysics.umd.edu](http://chemicalphysics.umd.edu) (<http://www.chemicalphysics.umd.edu/>)

**Application Process:** [gradschool.umd.edu/admissions/application-process/step-step-guide-applying](https://gradschool.umd.edu/admissions/application-process/step-step-guide-applying) (<https://gradschool.umd.edu/admissions/application-process/step-step-guide-applying/>)

## 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.