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 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, 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.

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

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.

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

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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/)
ENMMA (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
• Description of Research/Work Experience
• Publications/Presentations (optional)
• Writing Sample(s) (optional)

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

APPLICATION DEADLINES

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<tr>
<th>Type of Applicant</th>
<th>Fall Deadline</th>
<th>Spring Deadline</th>
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<tr>
<td>Domestic Applicants</td>
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<td>US Citizens and</td>
<td>December 17, 2021</td>
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<td>Permanent Residents</td>
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<td>International Applicants</td>
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<td>F (student) or J</td>
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<td>visas; A,E,G,HJ and L</td>
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<td>visas and immigrants</td>
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RESOURCES AND LINKS:
Program Website: chemicalphysics.umd.edu (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.