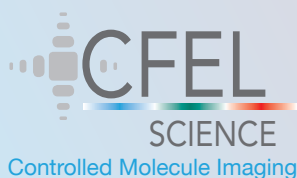


Controlled Molecule Imaging



research projects

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The Controlled Molecule Imaging group at the Center for Free-Electron Laser Science at DESY and Universität Hamburg performs novel experiments on the control and imaging of gas-phase molecules and their ultrafast dynamics with applications in fundamental physics, chemistry and structural biology.

We develop new experimental approaches to cool and control complex molecules, such as spatial separation of individual molecular species, alignment and orientation of molecules in space, and the creation of well-defined molecular wavepackets. We image molecular structures and dynamics — recording movies of molecules at work — using ion and electron imaging as well as coherent diffractive imaging techniques with x-rays and electrons. This work is accompanied by sophisticated data analysis, computational modeling, and *ab initio* theory developments.

Structure and dynamics of controlled molecules and nanoparticles

We offer various fully funded positions at the postdoctoral and doctoral level as well as research projects and internships for undergraduate students.

The topics of these projects include experimental and theoretical investigations of ultrafast molecular dynamics, novel control methods for the motion of molecules and nanoparticles, novel diffractive imaging approaches of atomically resolved structures and structural dynamics, photoelectron spectroscopies for the investigation of ultrafast dynamics and the imaging and control of chiral molecules.

Please see our website for more information or contact us if you are interested in joining the team:

- <https://www.controlled-molecule-imaging.org/careers>
- Prof. Dr. Jochen Küpper (jochen.kuepper@cfel.de) – group leader
- Dr. Sebastian Trippel (sebastian.trippel@cfel.de) – team leader experimental molecular physics
- Dr. Andrey Yachmenev (andrey.yachmenev@cfel.de) – team leader theoretical molecular physics
- N.N. (jochen.kuepper@cfel.de) – team leader (bio)nanoparticle physics and imaging

Int. Rev. Phys. Chem. **34**, 557 (2015) – DOI: 10.1080/0144235X.2015.1077838

Phys. Rev. Lett. **121**, 193201 (2018) – DOI: 10.1103/PhysRevLett.121.193201

further publications: <https://www.controlled-molecule-imaging.org/publication/scientific>



CMI offers unique research opportunities in an interesting, open, international team and with first-class experimental and computational facilities. Our group is embedded in the Center for Free-Electron-Laser Science, Deutsches Elektronen-Synchrotron DESY, Universität Hamburg, and the Hamburg Center for Ultrafast Imaging.

<https://www.controlled-molecule-imaging.org>



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