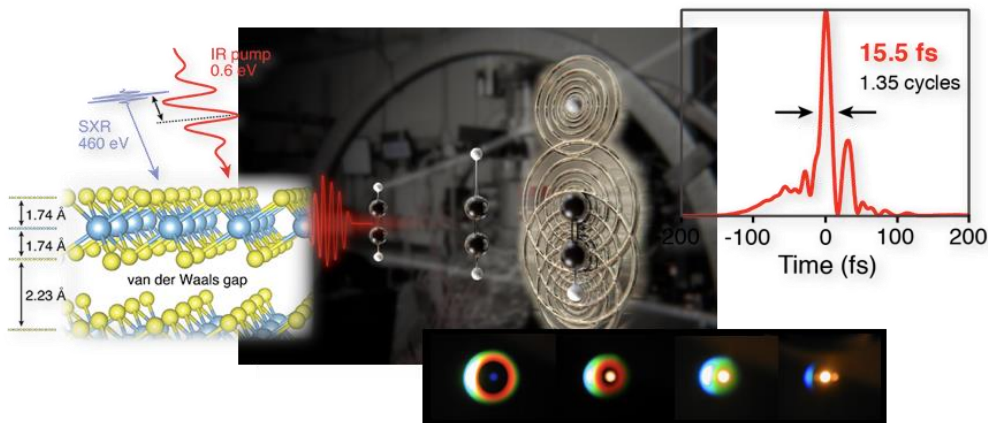


## Research positions (PhD-, Postdoctoral-level): Topological NanoPhotonics (ERC Advanced Grant)

The **Attoscience and Ultrafast Optics** research group at ICFO, led by **Prof. Dr. Jens Biegert**, is looking for well-qualified, highly motivated and dynamic young graduates and scientists who wish to enhance his/her scientific career in a friendly and stimulating environment within the field of Attosecond Science, Ultrafast Quantum Materials and Atto-Chemistry. Positions are available for experimentalists or theorists and with background in those areas, but also in computer science, x-ray spectroscopy, condensed matter physics or computational physics.

**Rationale:** Chemical and material sciences are key drivers of our modern economy with transformative impact at all levels of society. In particular, the ability to synthesize and to tailor substances and materials with specific function is all-pervading into modern society. Vital is a firm understanding of structural transformations of molecules and phase transitions of solids as they are omnipresent, e.g. as formation and breakage of molecular bonds, proton motion and isomerization, and as collective phenomena in phase transitions. The objective of our research is gaining unprecedented insight into the *real-time* electronic and nuclear dynamics of molecular transformations and phase transitions with advanced new methodologies and a multi-faceted approach to the investigation. The project exploits our pioneering achievements in attosecond soft X-ray spectroscopy (XAFS) and laser-induced electron diffraction (LIED) to pinpoint in real-time which electronic states participate at which nuclear configuration.



### References:

- Real-time carrier dynamics in quantum materials. arXiv: 1808.06493
- Instantaneous response of Dirac materials. Nature Comm. 9, 1018 (2018).
- Attosecond dispersive soft X-ray absorption fine structure spectroscopy. Optica 5, 502-506 (2018)
- Ultrafast electron diffraction imaging of bond breaking in di-ionized acetylene”, Science 354, 308 (2016).
- 0.5 keV soft X-ray attosecond continua, Nature Commun. 7, 11493 (2016) (2016)
- Imaging aligned polyatomic molecules with laser-induced electron diffraction, Nature Commun. 6, 7262 (2015)

**In case of interest, candidates may contact Prof. Dr. Jens Biegert ([jens.biegert@icfo.eu](mailto:jens.biegert@icfo.eu)) for further details.**

\* The positions will be funded by the Project “TRANSFORMER”, an ERC Advanced Grant awarded by the European Research Council established by the European Commission.