

Energy Conversion Pathways in Graphite from Attosecond Soft X-ray Spectroscopy

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The conversion of light to fundamental excitations of matter is governed by the build-up of electronic coherences and their dephasing to excited quasiparticles due to scattering processes, which occur on atto- and femtosecond timescales. Disentangling the interplay of these mechanisms, and how they lead to a specific flow of energy inside a material, is extremely challenging since many of these effects occur on overlapping temporal scales. I will discuss the semimetal graphite, which was investigated with attosecond K-shell X-ray absorption near edge structure (XANES) spectroscopy and show how the combination of our new measurement methodology with theoretical modelling allows to assign the spectroscopic signatures to microscopic processes relating to the dynamic evolution of electrons, holes and phonon modes of the material.

About the speaker:

Jens Biegert received his PhD in 2001 with distinction from the Technical University Munich and his work was awarded the Allen Prize of the Optical Society (OSA). He went on to head a research group on ultrafast pulse generation and strong field physics during his Habilitation at ETH Zurich from 2001 until 2006. Since 2007 as tenured Professor at ICFO and ICREA Professor, his research focus lies on the investigation of the real-time quantum dynamics of electrons and nuclei in atoms, molecules and solids.

Author of the Whitebook leading to the pan-European Extreme Light Infrastructure (ELI), CHair of the General Assembly of Laserlab-Europe-AISBL, Board of Vice Chairs of the Analytical Research Infrastructures of Europe (ARIE), elected member of the Management Board of Laserlab-Europe and Laserlab-Europe AISBL, Chair of the Board of Meetings of The Optical Society (OSA) and on the Meetings Council of OSA, Panel Member of the ERC and at the Volkswagen Foundation, and traveling lecturer of The Optical Society (OSA).

He holds an appointment as Adjunct Professor at the University of New Mexico in the USA, as Guest Professor at the Fritz Haber Institute of the Max Planck Society at Berlin. He is Associate Editor of APL Photonics, Associate Editor of Ultrafast Science, received the Thousand Talents Program Award from the Government of China, is Fellow of the German Academic Scholarship Foundation, Fellow of Optical Society of America, and Fellow of the American Physical Society. He currently holds an ERC Advanced Grant, coordinates a FET Consortium and was awarded the Bessel Prize of the Alexander von Humboldt Foundation.

Presenter: Prof. BIEGERT, Jens (ICFO, Spain)

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