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【414】 Time-resolved two color X-ray pump/X-ray probe photoelectron spectroscopy at XFELs

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Recently, researchers at XFELs have demonstrated the ability to produce two intense femtosecond x-ray pulses with controlled time delay and color. Here we utilize these capabilities to perform X-ray pump/ X-ray probe photoelectron spectroscopy with high temporal resolution. This allows us to observe electronic and nuclear dynamics in core excited states and to follow how an initially local excitation “travels” across a molecule in real time. These experiments on a prototypical molecule, CO, lay the foundation for time-resolved photoelectron spectroscopy following femtosecond energy and charge transfer processes upon photoexcitation in more complex molecules.

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Authors: Dr AL HADDAD, Andre (Argonne National Laboratory); Dr PICON, Antonio (Departamento de Física Aplicada, University of Salamanca); Dr BUCHER, Maximilian (Argonne National Lab); Dr DOUMY, Gilles (Argonne National Laboratory); Dr YOUNG, Linda (Argonne National Laboratory); Dr SOUTHWORTH, Stephen (Argonne National Laboratory); Dr PRATT, Stephen (Argonne National Laboratory); Dr COFFEE, Ryan (SLAC National Laboratory); Dr HOLMES, Michael (SLAC National Laboratory); Dr KRZYWINSKI, Jacek (SLAC National Laboratory); Dr LUTMAN, Alberto (SLAC National Laboratory); Dr MARINELLI, Agostino (SLAC National Laboratory); Dr MOELLER, Stefan (SLAC National Laboratory); Dr RATNER, Dan (SLAC National Laboratory); Dr WALTER, Peter (SLAC National Laboratory); Prof. BOSTEDT, Christoph (Paul Scherrer Institut (PSI))

Presenter: Dr AL HADDAD, Andre (Argonne National Laboratory)

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