Molecular photophysics and photochemistry probed by ultrafast optical and X-ray spectroscopies

Content

The past ten years have witnessed a revolution in science with the advent of new ultrafast optical and X-ray domain methodologies enabled by new instrumentation, such as X-ray free electron lasers (XFEL) and table-top HHG sources of Extreme UV pulses radiation. In this presentation, I will focus on developments in deep-UV (sub-300 nm) to X-ray spectroscopies. I will present some results of 2D deep-UV studies of biological systems, revealing hitherto unknown electron transfer processes, [1,2] and then proceed to presenting recent ultrafast deep-UV Circular dichroism studies of molecular systems. [3–5] I will then present the first results on the X-ray helical dichroism of molecular systems, [6] and move onto recent developments in ultrafast non-linear X-ray science, focusing on hard X-ray transient grating spectroscopy, [7,8] as well as subsequent developments.

References

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