

# **Ultrafast laboratory-based x-ray source and its application to molecular structure of solvated molecules**

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An x-ray system suitable for ultrafast x-ray absorption fine structure (XAFS) and x-ray diffraction measurements of solutions and crystals has been constructed in our lab. It consists of a Ti:sapphire laser system specifically designed for ultrafast x-ray pulse generation at 2 kHz. With this system, ultrafast x-ray pulses are produced from various solid and liquid metal targets. XAFS-spectra of transition metal complexes solvated in various solvents are measured and analyzed. We demonstrate that the simultaneous application of x-ray and optical spectroscopy provide correlated structural information.