Investigation of the dynamic behavior in Prussian blue analogs by means of the time-resolved XAFS

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Prussian blue analogs have recently attracted great interest due to their various characteristics in the photo-induced phase transition (PIPT) as a photo-induced magnetization as well as photo-induced structural change[1]. The investigation of the dynamics of PIPT allows us to obtain information how the photo-excitation in the single site expands into a macroscopic phase transition. In this study, we have studied their dynamical behavior by means of the time-resolved x-ray absorption fine structure (XAFS) measurement. In time-resolved XAFS spectrum, an extended x-ray absorption fine structure (EXAFS) is useful to reveal the dynamics of local structures around transition-metal atoms. Moreover, the dynamics of electronic properties and the spin states can simultaneously be studied by the measurements of x-ray absorption near edge structure (XANES) spectra.

The time-resolved XAFS experiments were performed on the NW14A at the Photon Factory Advanced Ring[2]. Transient XAFS spectra were collected by pump-probe technique with the femtosecond laser system. Transient features induced by laser pulse excitation were obtained at 100 ps resolution. The detailed results will be presented.

Reference