

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

1. H. Tokoro et al. *Appl. Phys. Lett.* 2003, 82, 1245-1247.
2. Nozawa et al. *J. Synchrotron Rad.* 2007, 14, 313-319.