

Principal Researcher	Yutaka Moritomo			Number of Reserchers	3	
Research Institution • Department • Title	Associated Professor, Department of Applied Physics, Nagoya University			Location of Institution	Nagoya	
Title of Project	Structural determination of Photo-excited state by Synchrotron Radiation X-ray powder diffraction					
Abstract of Research Project	<p>The aim of our project is determination of “transient structure” produced by photo-excitation by means of synchrotron X-ray powder diffraction. We expect unusual “transient structure” is achieved immediately after the photo-excitation. So far, there is no experimental method to reveal the “transition structure”. However, the synchrotron radiation X-ray source enables us to investigate the “transition structure”. We believe this research field becomes the important research field in the 21th century. Recently, intensive investigation of the “transient structure” begins to start in the world major synchrotron facility. Now, we start the 5 years concentrated investigation on the “transient structure” in the Japanese synchrotron facility, SPring-8.</p> <p>There are two methods to establish the time-resolved X-ray diffraction. One is to use a mechanical shutter that synchronizes with the ring., the other is to use a time-resolved-type X-ray detector. The Spring-8, BL40XU already has the mechanical shutter, and several ns (white) X-ray pulse can be obtained at 1 kHz. So, we will make up a powder diffraction system to measure the time-resolved powder diffraction patterns. At the same time, we introduce a time-resolved X-ray detector at BL02B2 to start investigation on the structure dynamics.</p>					
References	<p><u>Y. Moritomo</u>, K. Kato, A. Kuriki, A. Nakamoto, N. Kojima, M. Takata, M. Sakata, Structural analysis of [Fe(ptz)₆](BF₄)₂ under photo-excitation - condensation of photo-excited high-spin ions -, <i>J. Phys. Soc. Jpn.</i>, 71, 2609 - 2612 (2002).</p> <p>X. J. Liu, <u>Y. Moritomo</u>, T. Kawamoto, A. Nakamoto and N. Kojima, Dynamical phase transition in a spin-crossover complex, <i>J. Phys. Soc. Jpn.</i>, 72, in press.</p>					
Term of Project	Fiscal years 2003-2007 . (5years)					
Budget Allocation (in thousand of yen)	FY2003	FY2004	FY2005	FY2006	FY2007	TOTAL
	29,900	18,500	21,100	9,200	9,200	87,900
Homepage Address	None					