

Phase Determination using a Wide-band Parallel Synchrotron Radiation Beam

Tomoyuki Koganezawa, Takeshi Udagawa, Yukio Yoshimura, Naotake Nakamura, Hiroshi Iwasaki, *Faculty of Science and Engineering, Ritsumeikan University.* E-mail: kt770217@se.ritsumeikai.ac.jp

New diffraction system has been constructed at the Synchrotron Radiation Center at Ritsumeikan University, in which a wide-band parallel X-ray beam is produced by reflection from the depth-graded multilayer monochromator [1]. The band width is 600eV and the monochromator is useful in the photon energy range from 6000eV to 8000eV.

In diffraction patterns of an oscillating single crystal recorded using this system, Bragg reflections appear in an elongated form on an imaging plate and, if the absorption edge of an atom in the sample crystal is included in the band, a characteristic intensity profile is seen due to anomalous dispersion. As an application of this system, we determined the phase of the structure factor of a ferrocene derivative crystal, $C_{36}H_{32}O_7Fe$, choosing the Fe atoms as anomalous scatterers, based on a newly developed method of phase determination [2].

[1] Koganezawa T., Uno K., Iwasaki H., Nakamura N., Yoshimura Y., Shoji T., *J. Appl. Cryst.*, 2004, **37**, 136-142. [2] Iwasaki H., Yurugi T., Yoshimura Y., *Acta Cryst. A*, 1999, **55**, 864-870.

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