Characterization of Heteropoly Acids by X-ray Powder Diffraction at SPring-8

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It is important to know in short time whether a material synthesized is the material actually desired. The single crystal X-ray diffraction method is one of the typical and popular methods for this purpose, especially in the field of the structure analysis on the heteropoly acids. In this study, another method was examined, where the structure analysis was done by the powder diffraction method using the synchrotron radiation. Synchrotron radiation has a very small divergence and a high brilliance. Therefore, the method would make it possible to measure a peak separation, which would be difficult using the conventional laboratory system. In addition, it also makes the measurement time much shorter. Powder diffraction profiles using a large Debye-Sherrer camera with an imaging plate at the synchrotron public industry beamline BL19B2/SPring-8. The wavelength of the incident X-ray used was 0.1237 nm. The powder of a Keggin-type [$K_8SiW_{11}O_{39}$] complex was sealed in a soda glass capillary. The structure parameter of heteropoly acids was determined using the following two methods direct method (EXPO2004)[1] and Rietveld method (RIETAN2000)[2]. (Supported by Hyogo prefecture CREATE, JST.)

[1] Altomare A., et al., *J Appl. Cryst*. , 2004, **37**, 1025-1028. [2] Izumi F., Ikeda T., *Mater. Sci. Forum*, 2000, **198**, 321-324.

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