Microcrystal X-ray Analyses using LTV Camera at SPring-8 BL02B1 Beamline

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Single crystal X-ray analysis is conventional and powerful tool in order to explore new functional materials and understand those chemical and/or physical properties. However, the single crystal analyses are frequently encountered difficulties because of extremely small sizes of the crystal specimens.

High intense synchrotron radiation should enable us to perform the crystal structure analyses of such very small crystals with several micrometers. As the first step of developing the technique of microcrystal structure analysis, we tried to do the single crystal structure analyses for small organic compounds using the low-temperature vacuum X-ray camera installed at SPring-8 BL02B1 beamline.

Cytidine crystal with dimensions 6.7 x 5.0 x 3.3 μm^3 was used for measurement. Although the crystal structure could be solved by the direct method, all the non-hydrogen atoms were refined isotropically and hydrogen atoms located geometrically.

The structure analysis of chiral C60-fullerene *cis*-3 bisadducts crystal with dimensions 100 x 75 x 2 μm^3 was also curried out. The crystal structure could be solved by the direct method and all the non-hydrogen atoms were refined isotropically. The absolute configurations were first established by combination of this study and CD studies.

Keywords: single crystal, small crystals, synchrotron x-ray diffraction