Kottogite and symplesite are zinc and ferrous arsenate minerals, respectively. These minerals make the Zn$_{3-x}$Fe$_x$(AsO$_4$)$_2$ • 8H$_2$O solid-solution and belongs to the vivianite group of minerals with the chemical formula M$_3$(TO$_4$)$_2$ • 8H$_2$O. The structure of vivianite and symplesite were determined firstly by Mori and Ito, (1950). The structure of kottigite was refined by Hill, (1979). The structure of Zn$_{1.63}$Fe$_{1.37}$(AsO$_4$)$_2$ • 8H$_2$O solid-solution crystallize in space group C2/m with a= 10.342(1), b= 13.484(2), c= 4.7756(5), β=105.306(4), and Z=2. We performed the structure refinements of (Zn,Fe)$_3$(AsO$_4$)$_2$ • 8H$_2$O solid-solutions, Ojuela mine, Mapimi Durango, Mexico and Kiura mine, Ohita, Japan by RIGAKU single-crystal structure analysis system RAPID. The R and S values are around 0.03 and 1.08. We determined detail atomic coordinate and hydrogen atom positions. The hydrogen bonds were revealed based on hydrogen positions and bond valence calculations. The octahedral edge-shareing M$_2$O$_6$(H$_2$O)$_4$ dimers and insular MO$_2$(H$_2$O)$_4$ octahedra are linked by AsO$_4$ tetrahedra. Two H$_2$O group bonds to (Zn,Fe). Four hydrogen atoms are in the normal hydrogen bonds. Hydrogen atom positions have a tunnel structure and there is a path of proton-conduction and we conjecture that proton conductivity has large anisotropy of one direction. The related minerals, such as paradamite, legrandite and warikahnite have tunnel structure similar to vivianite group.


**Keywords:** (Zn,Fe)$_3$(AsO$_4$)$_2$ • 8H$_2$O, single crystal diffraction, hydrogen bonds in minerals