

There has been considerable interest in the 3d transition metal disulfides having pyrite structure to study metal-insulator transition in connection with the Mott-Hubbard model.<sup>1)</sup> Recently, by high pressure electrical measurement Wilson and Pitt<sup>2)</sup> have found that a metal-insulator transition in  $\text{NiS}_2$  occurs in the vicinity of 32 kbar at room temperature. They also have pointed out that for the semiconducting  $\text{NiS}_2$  there is a lattice parameter greater by  $0.03\text{\AA}$  than would have occurred in a metallic phase.

In the present study, we carried out X-ray diffraction measurement on  $\text{NiS}_2$  at room temperature up to 100 kbar in order to clarify if the transition is associated with a change in crystal structure and/or volume.

Single crystals having pyrite structure with a parameter  $a=5.687\text{\AA}$  were prepared by chemical vapour transport with chlorine. A powdered sample of the single crystals was filled in a 0.3 mm hole in the center of a boron-epoxy disk, which was pressed between Bridgman anvils.<sup>3)</sup>

A pressure clamp vessel including the anvils was mounted on a goniometer of a Guinier focusing camera. Diffraction pattern by Mo-K $\alpha$  radiation was recorded on a curved film with a radius of 114.6 mm that allows a dispersion equal to maximum  $2\theta$  angle of  $45^\circ$ . The pressure on the sample was calibrated by intimately mixing  $\text{NiS}_2$  with CsCl as an internal standard for pressure because almost every line of NaCl overlaps the lines of  $\text{NiS}_2$ . The pressure-volume relation for CsCl calculated by Decker<sup>4)</sup> was used