

to obtain the pressure values based upon the lattice parameter. The diffraction lines, 110, 111, 200, 210, and 211 were used for the calculation of the lattice parameter of CsCl. The error in pressure calibration is  $\pm 1$  kbar.

The pressure-volume data for  $\text{NiS}_2$  are shown in Fig. 1. The volume for  $\text{NiS}_2$  was determined from the six diffraction lines, 111, 200, 210, 211, 220, and 311. The error in  $V/V_0$  is  $\pm 0.1\%$ . It is seen from the figure that the low pressure phase (insulating) and the high pressure phase (metallic) have the different compression curves. The transition point with volume discontinuity appears to lie between 37 and 48 kbar and the volume change at the transition is  $-0.4 \pm 0.1\%$ . The volume change between the two phases at atmospheric pressure and room temperature is tentatively estimated to be  $-1.6 \pm 0.3\%$  by a linear extension of the compression curve of the metallic phase. This value is in good agreement with one estimated by Wilson and Pitt.<sup>2)</sup>

Moreover, any new diffraction lines indicating a change in the structure of  $\text{NiS}_2$  were not observed in the pressure range up to 100 kbar. The pyrite structure remains in this pressure range because any change in the intensities of the lines of pyrite structure was not found. It seems that the pressure-induced first order transition in  $\text{NiS}_2$  is a Mott transition associated with delocalization of d-state of  $\text{Ni}^{2+}$ ,