

Effects of Selenium Impurities on the Superstructure Transition of Iron Sulfide

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The hexagonal mixed series of sulfides $\text{FeS}_{1-x}\text{Se}_x$ has been studied by Mössbauer spectroscopy and x-ray diffraction. The Mössbauer absorption lines are six in number and sharp at both high and low temperatures while they are 12 in number or broad for intermediate temperatures. As the Se impurity increases, the Néel temperature decreases very slowly while the temperature of maximum coexistence decreases very rapidly at first and then increases with increasing Se concentration in marked contrast with the results for cationic substitution.