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Neutron diffraction and Mössbauer study of the magnetic structure of YFe_6Sn_6

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We have used time-of-flight (TOF) neutron powder diffraction, and both ^{57}Fe and ^{119}Sn Mössbauer spectroscopy over the temperature range 2–600 K to determine the magnetic ordering mode of the Fe sublattice in YFe_6Sn_6. The crystal structure is orthorhombic (space group *Immm*). The Fe sublattice orders antiferromagnetically with a Néel temperature of 558(5) K. The TOF neutron diffraction patterns obtained at 4 and 293 K show that the antiferromagnetic ordering of the Fe sublattice is along [100] with a propagation vector **q**=[010]. The magnetic space group is $I_Pm'm'm'$. This magnetic structure is confirmed by our ^{119}Sn Mössbauer spectra. © *2000 American Institute of Physics.*