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1. 概要（Summary）

Within last years, a research of magnetocaloric effects (MCE) in Ni-Mn based Heusler alloys has become very intensive since Ni-Mn-In-Co and Ni-Mn-Sn alloys showed large magnetic filed induced entropy change. The large entropy change in these alloys stems from the magnetic field first order magneto-structural martensitic transformation (MT). Recent studies show that an enhanced entropy change can be obtained in Ni-Mn-Sn alloys by increasing the concentration of Mn. Therefore, Mn_2NiSn alloys have drawn considerable attention due to a potentially large entropy change and high refrigerant capacities.

In this work, we focus on the behavior of electronic structure of Fe-doped Mn_2NiSn alloy during transformation from cubic austenite to a tetragonal martensite. Herewith we present the results of X-ray magnetic circular dichroism (XMCD) spectra measurements for $Mn_{48.1}Ni_{40.2}Fe_{2.5}Sn_{9.2}$, which exhibits a martensitic transition of 250 K.

2. 実験(目的,方法)（Experimental）

Polycrystalline ingot of $Mn_{48.1}Ni_{40.2}Fe_{2.5}Sn_{9.2}$ (at.%) alloy was prepared by the induction melting under argon atmosphere. The ingot was annealed for three days in argon atmosphere at 1223 K and then quenched in water. The X-ray absorption spectra (XAS) and XMCD spectra were measured with the total electron yield method using circularly polarized synchrotron radiation at the undulator beamline BL23SU of SPring-8. The sample temperature was regulated in the temperature range from 20 to 260K.

3. 結果と考察(Results and Discussion）

In order to gain insight into site-specific magnetic moments, the XAS and XMCD experiments for $Mn_{48.1}Ni_{40.2}Fe_{2.5}Sn_{9.2}$ have been implemented. Our analysis shows a clear change of magnetic moments as a function of temperature, which must be related to the drastic change in the electronic states near the Fermi energy as observed by the hard X-ray photoelectron spectroscopy.

4. その他・特記事項（Others）