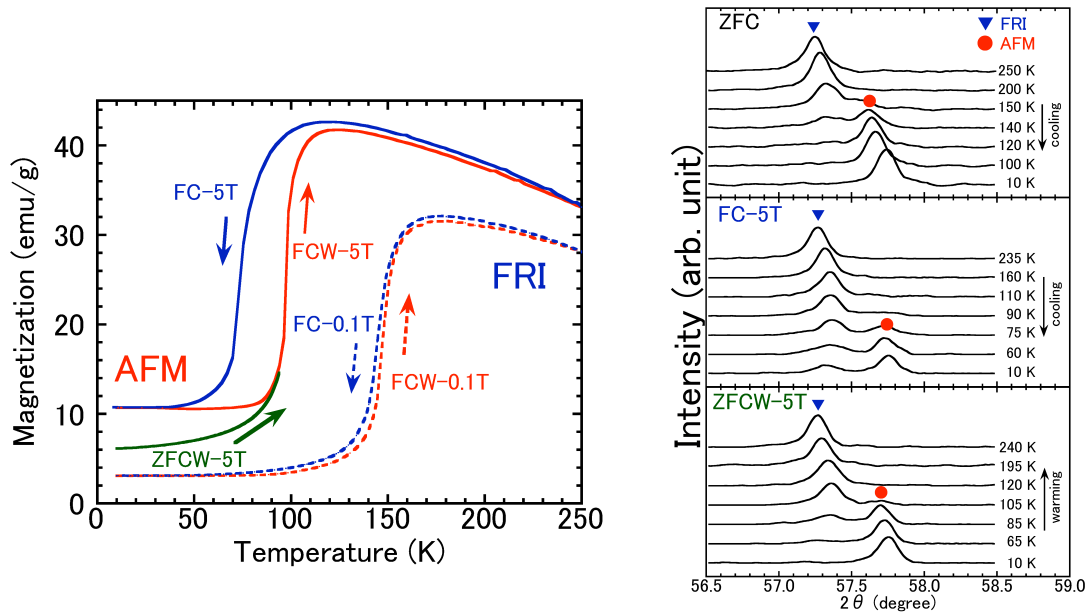


X-ray Diffraction Study on Crystal Structure of $Mn_{1.8}Co_{0.2}Sb$ under High Magnetic Fields

強磁場 X 線回折実験による $Mn_{1.8}Co_{0.2}Sb$ の磁場中結晶評価



High field X-ray diffraction (HF-XRD) and magnetization (M) measurements were performed for $Mn_{1.8}Co_{0.2}Sb$ in order to clarify the structural properties affected by field-induced kinetic arrest (KA) effect. In $T < 50$ K, the values of M in field cooling at 5 T (FC-5T) and in field cooled warming at 5 T (FCW-5T) are larger than that in field warming at 5 T after zero-field cooling (ZFCW-5T). In HF-XRD (FC-5T) patterns, the two-phase coexistence of the ferrimagnetic (FRI, high temperature phase) and the antiferromagnetic (AFM, low temperature phase) were confirmed at 10 K. The M properties in $T < 50$ K is explained by the volume fraction of field-induced residual FRI phase in the AFM phase. Our results show that the field-induced KA effect affects not only magnetic property but also structural property

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磁化測定と強磁場 X 線回折測定を行い、KA 効果が結晶構造に与える影響を調査した。50 K 以下の磁気特性は磁場中冷却過程に依存し、FC-5T と FCW-5T の低温磁化は、ZFCW-5T のそれと比較して大きい。X 線回折測定の結果、FC-5T において、10 K で FRI 相(高温相)と AFM 相(低温相)の二相共存状態が確認された。50K 以下の磁気特性は磁場による残留フェリ磁性相の体積分率によって説明できる。つまり、磁場誘起の KA 効果は磁気特性だけでなく構造特性にも影響を与えることが明らかになった。

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