

Abstract Submitted
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Magnetic Phase Diagram of CeMnCuSi₂ GAN LIANG, Sam Houston State University, F. YEN, University of Houston, MARK CROFT, Rutgers University — Field and temperature dependent magnetization measurements on polycrystalline CeMnCuSi₂ reveal the Mn moments in this compound exhibit ordering with a ferromagnetic (FM) component ordered instead of the previously reported purely antiferromagnetic (AFM) ordering. The FM ordering temperature, T_c , is about 120 K and almost unchanged with external fields up to 50 kOe. Furthermore, an AFM component is observed to be present in this phase, and its orientation is modified rapidly by the external magnetic field. The Ce L_3 -edge x-ray absorption result shows that the Ce ions in this compound are nearly trivalent. Large thermomagnetic irreversibility is observed between the zero-field-cooled (ZFC) and field-cooled (FC) $M(T)$ curves below T_c indicating strong magnetocrystalline anisotropy in the ordered phase. At 5 K, a metamagnetic type transition is observed to occur at a critical field of about 8 kOe, and this critical field decreases with increasing temperature. Based on these results, a magnetic phase diagram is constructed for CeMnCuSi₂.

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