Structure and magnetic properties of $Gd_4(Mn_{0.05}Sb_{0.95})_3$

Phan M.-H., Chau N.N., Oh S.K., Yu S.-C.
Department of Physics, Chungbuk National University, Cheongju 361-763, South Korea; Center for Materials Science, National University of Hanoi, 334 Nguyen Trai, Hanoi, Viet Nam

Abstract: This work studies the structure and magnetic properties of $Gd_4(Mn_{0.05}Sb_{0.95})_3$ with the aim to clarify the role played by the magnetic Mn atom. Upon substitution of Mn for Sb in the parent Gd_4Sb_3 compound, it is found that the inverted Th_3P_4-like structure has been somewhat expanded. The Curie temperature is increased while magnetic moment, measured in the field of 50kOe at 200K, is slightly reduced. The ferromagnetic semiconductor, $Gd_4(Mn_{0.05}Sb_{0.95})_3$, undergoes a ferromagnetic to paramagnetic transition at 270K. Observed anomalies occur in the magnetization vs. temperature curves measured in a very low magnetic field. They are attributed to magnetic inhomogeneities resulting from a structural modification in $Gd_4(Mn_{0.05}Sb_{0.95})_3$.
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Correspondence Address: Oh, S.K.; Department of Physics, Chungbuk National University, Cheongju 361-763, South Korea; email: skoh@chungbuk.ac.kr
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Authors with affiliations:

- Phan, M.-H., Department of Physics, Chungbuk National University, Cheongju 361-763, South Korea
- Chau, N.N., Center for Materials Science, National University of Hanoi, 334 Nguyen Trai, Hanoi, Viet Nam
- Oh, S.K., Department of Physics, Chungbuk National University, Cheongju 361-763, South Korea
- Yu, S.-C., Department of Physics, Chungbuk National University, Cheongju 361-763, South Korea

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