



ISAMT / SOMMA 2005



**International Symposium on Spintronics and Advanced Magnetic Technologies
and International Symposium on Magnetic Materials and Applications 2005**

Grand Hotel Taipei, Taiwan • August 24~27, 2005

Hosted By :

Taiwan Association for Magnetic Technology, Taiwan
Research Center for Advanced Magnetic Materials, CNU, Korea
Institute of Physics, Academia Sinica, Taipei, Taiwan
Opto-Electronics & Systems Labs., ITRI, Hsinchu, Taiwan
Taiwan Spin Reach Center, Taiwan

Sponsored By :

Department of Industry Technology, MOEA, Taiwan
National Science Council, Taiwan
The Physical Society of Republic of China, Taiwan

Program



Crystallographic and Mössbauer studies of $\text{YMn}_{1.8}\text{Fe}_{0.2}\text{O}_5$

Jai Hoon Yeom, In-Bo Shim, Chul Sung Kim (Kookmin University, Korea)

The crystallographic and magnetic properties of $\text{YMn}_{1.8}\text{Fe}_{0.2}\text{O}_5$ powders have been studied by x-ray, neutron diffraction, and Mössbauer spectroscopy. The samples were prepared by sol-gel process and crystallized at various temperatures. The crystalline structures of the powders sintered below 1200 °C were found to be a single phase of orthorhombic(space group : *Pbam*), containing in the crystalline structure infinite chains of $\text{Mn}^{4+}-\text{O}_6$ octahedra sharing edges, linked together by $\text{Mn}^{3+}-\text{O}_5$ bipyramid. But the samples sintered above 1200 °C were changed to hexagonal structure with satellite phases. The crystal structure is determined by rietvelt method. For sintered at 1000 °C, the lattice parameters of $\text{YMn}_{1.8}\text{Fe}_{0.2}\text{O}_5$ were refined to be $a_0=7.294$, $b_0=8.492$, $c_0=5.681$ Å. The Mössbauer spectra of $\text{YMn}_{1.8}\text{Fe}_{0.2}\text{O}_5$ powders were taken at various temperatures ranging from 4.2 K to room temperature. The quadrupole splitting and the isomer shift at RT were 1.15 mm/s and 0.14 mm/s, respectively. The Néel temperature of $\text{YMn}_{1.8}\text{Fe}_{0.2}\text{O}_5$ was determined to be $T_N = 40$ K.

Oral Poster Invited Talk

Category Code : L. Others related to magnetism and magnetic materials

Corresponding Author:

Chul Sung Kim

Department of Physics, Kookmin University

861-1, Chongnung-dong, Songbuk-gu, 136-702 Seoul, Republic of Korea

E-mail : cskim@phys.kookmin.ac.kr

Tel : +82-2-910-4752

Fax : +82-2-910-5170