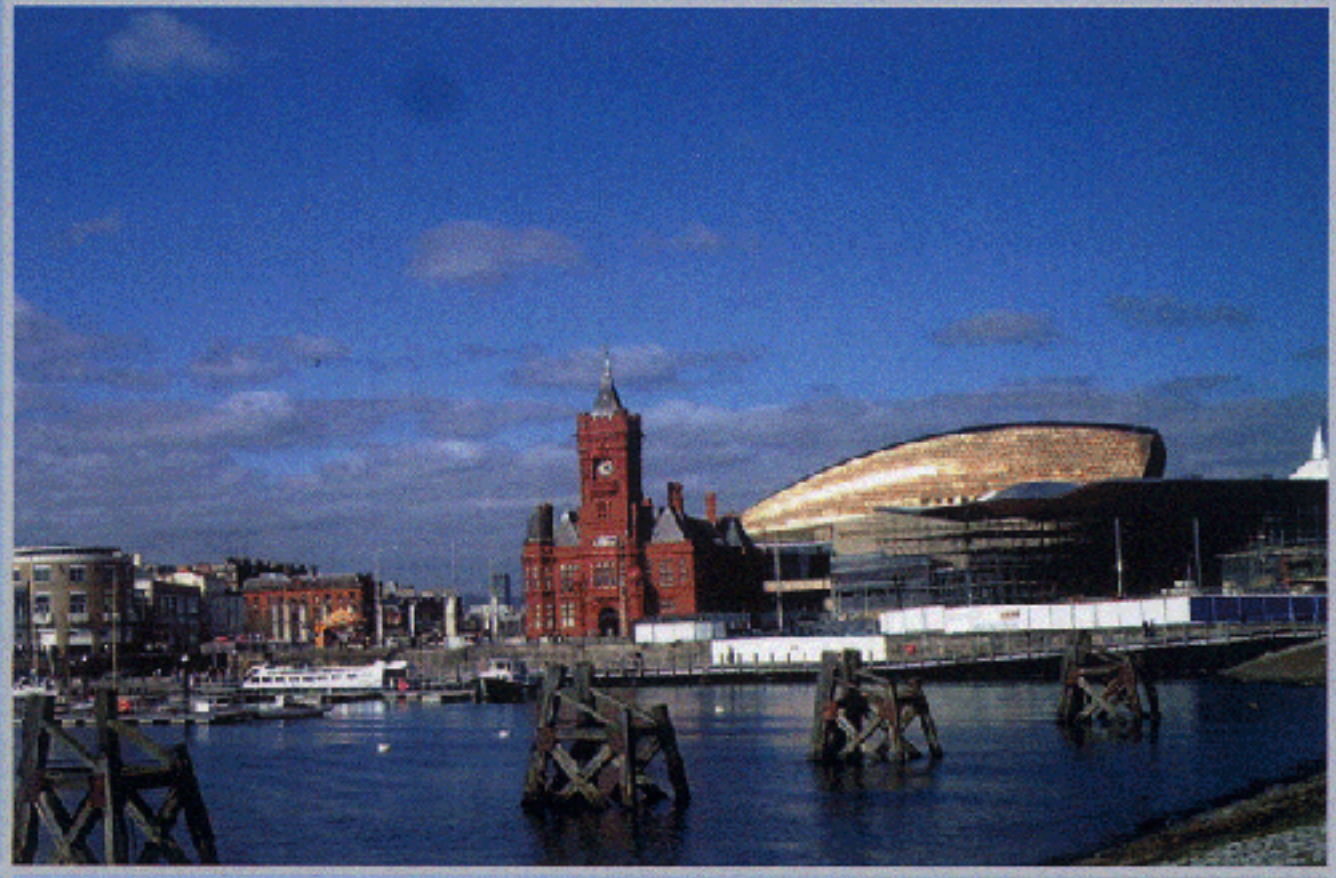
SMM 18
Soft Magnetic Materials
CARDIFF 2007

# Soft Magnetic Materials Conference (SMM 18)



# Book of Abstracts

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# MÖSSBAUER STUDY OF ANTIFERROMAGNETIC $CuFeO_2$

**Dong Hyeok Choi*, and Chul Sung Kim***

*Department of Physics, Kookmin University, Seoul 136-702, Korea

Recently, spin frustration system have been attracting attention in various materials because of their magnetic and multiferroic properties. We characterized magnetic properties and Mössbauer study of frustrated antiferromagnetic $CuFeO_2$ powders using by x-ray diffraction, Mössbauer spectroscopy, and neutron diffraction. The sample was prepared using solid state reaction methods and synthesized single phase at 1000 ℃ for 40 hours in evacuated silica tube. The x-ray diffraction pattern was hexagonal structure (space group $R\bar{3}c$), and lattice constants $a_0$ and $c_0$ were 3.037 and 17.182 Å, respectively. Mössbauer spectra were taken at various temperatures range from 4.2 K to room temperature. Néel temperature ($T_{N1}$) and commensurate magnetic ordering temperature ($T_{N2}$) were determined 17 K and 11 K using Mössbauer data One six-line hyperfine pattern was fitted at 11 K, but two six-line hyperfine patterns were fitted at 12 K and the hyperfine fields were 472 and 420 KOe, respectively. The isomer shift values at room temperature are found to be 0.32 mm/s, which are consistent with high-spin $Fe^{3+}$ charge states.

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[2] Setsuo Mitsuda, Hideki Yoshizawa, Nariyasu Yaguchi, and Mamoru Mekata, J. Phys. Soc. Jpn. 60, (1991) 1885.

*Address and E-mail of corresponding author:*
*Chul Sung Kim, 861-1 Jeongneung-dong, Songbuk-gu, Seoul 136-702, Korea, cskim@phys.kookmin.ac.kr*