IcAUMS 2018
The 5th International Conference of Asian Union of Magnetics Societies

June 3-7 (Sun.-Thur.), 2018
Ramada Plaza Jeju Hotel, Jeju, Korea

Organized by The Asian Union of Magnetics Societies
Co-organized by The Korean Magnetics Society
Sponsored by Samsung Electronics, LG Innotek, AMO
Supported by Jeju CVB, Jeju Vegetable Tourism Organization, KOEST
First-principles Study of Electric Field Induced Giant Perpendicular Anisotropic Energy of Two-dimensional VS\textsubscript{2} Monolayer
Huei-Ru Fuh\textsuperscript{1,2}, Ke-Chuan Weng\textsuperscript{1}, Yeu-Chung Lin\textsuperscript{1}, Tsung-Wei Huang\textsuperscript{1}, Horng-Tay Jeng\textsuperscript{2}, Chi-Ho Cheung\textsuperscript{1}, Ming-Chien Hsu\textsuperscript{1}, Ching-Ray Chang\textsuperscript{1}
\textsuperscript{1}National Taiwan University, Taiwan, \textsuperscript{2}Yuan Ze University, Taiwan, \textsuperscript{3}Institute of Nuclear Energy Research, Taiwan, \textsuperscript{4}National Tsing-Hua University, Taiwan

Comparison and Validation of Anisotropic Magnetization Models for Grain-oriented Silicon Steel
Xuan Teng\textsuperscript{1}, Dong Wang\textsuperscript{1}, Junquan Chen\textsuperscript{1}, Yapeng Jiang\textsuperscript{1}, Xiaolin Zheng\textsuperscript{2}
\textsuperscript{1}Naval University of Engineering, China, \textsuperscript{2}Qingdao University, China

Magnetism and Magnetocrystalline Anisotropy of C-substituted τ-MnAl
Jin Sik Park, Sonny Rhim, Soon Cheol Hong
University of Ulsan, Korea

Magnetic Anisotropy of Highly Nd\textsubscript{1-x}Bi\textsubscript{x}Fe\textsubscript{5-y}Ga\textsubscript{y}O\textsubscript{12} Studied by FMR Measurements
Takayuki Ishibashi\textsuperscript{1}, Gengjian Lou\textsuperscript{1}, Jion Yamakita\textsuperscript{1}, Masami Nishikawa\textsuperscript{1}, Nobuyasu Adachi\textsuperscript{2}, Takeshi Kato\textsuperscript{1}, Satoshi Iwata\textsuperscript{3}
\textsuperscript{1}Nagaoka University of Technology, Japan, \textsuperscript{2}Nagoya Institute of Technology, Japan, \textsuperscript{3}Nagoya University, Japan

Magnetic and Dielectric Properties of LiFePO\textsubscript{4} by Mössbauer Spectroscopy
Jae Yeon Seo, Hyunkyung Choi, Jung Tae Lim, Chul Sung Kim
Kookmin University, Korea

Mössbauer Studies of LiFe\textsubscript{1/3}Mn\textsubscript{1/3}Ni\textsubscript{1/3}PO\textsubscript{4} Cathode Material
Hyunkyung Choi, Soyeon Barng, Chul Sung Kim
Kookmin University, Korea

Effect of Decomposition Process on Crystallization of Garnet Films Fabricated by Metal Organic Decomposition Method
Yuya Hironaka, Hina Saito, Yoshito Ashizawa, Katsuji Nakagawa
Nihon University, Japan

First Principles Calculation on Magnetism and Magnetocrystalline Anisotropy of FeNi
Mun Bong Hong, Jin Sik Park, Sonny Rhim, Soon Cheol Hong
University of Ulsan, Korea

Electronic Structures of Quasi Two-dimensional Cubic CsSnBr\textsubscript{3}, Perovskite Nanoplatelets
WJ Fan
Nanyang Technological University, Singapore
Magnetic and dielectric properties of LiFePO$_4$ by Mössbauer spectroscopy

Jae Yeon Seo, Hyunkyung Choi, Jung Tae Lim, Chul Sung Kim
Kookmin University, Korea

LiFePO$_4$ sample was prepared using the ball mill method. A mixture of Li$_2$CO$_3$, FeC$_2$O$_4$·2H$_2$O, and NH$_4$H$_2$PO$_4$ was ground. The mixture was first calcined at 300 °C for 4 h under Ar atmosphere and was pressed into a pellet. Theses mixtures were sintered at 700 °C for 10 h under Ar atmosphere. The sample was measured by X-ray diffraction (XRD) and the LiFePO$_4$ sample confirmed that the structure of sample was orthorhombic with space group of Pnma. From the Rietveld refinement method, the crystal unit cell parameters for LiFePO$_4$ are $a_0 = 10.324$, $b_0 = 6.004$, $c_0 = 4.690$ Å, and $V = 290.781$ Å$^3$. Zero field-cooled (ZFC) and field-cooled (FC) curves of LiFePO$_4$ was measured by using a vibrating sample magnetometer (VSM) within the temperatures ranging from 4.2 to 295 K at 1000 Oe. The Néel temperature ($T_N$) and the spin-reorientation temperature ($T_S$) were found to be $T_N = 51.5$ K, $T_S = 25$ K. We have investigated the magnetic hyperfine interaction by using Mössbauer spectrometer at various temperatures ranging from 4.2 to 295 K. At temperature below $T_N$, Mössbauer spectra of sample were analyzed asymmetric 8-absorption lines because of the magnetic dipole and electric quadruple interaction. At 4.2 K, the magnetic hyperfine field ($H_{hf}$), the electric quadruple splitting ($\Delta E_Q$), and isomer shift ($\delta$) for LiFePO$_4$ are found to be $H_{hf} = 124.96$ kOe, $\Delta E_Q = 2.74$ mm/s, $\delta = 1.23$ mm/s, polar angle $\vartheta = 0^\circ$, azimuthal angle $\varphi = 0^\circ$, and asymmetric parameter $\eta = 0.8$, while at 295 K, $\Delta E_Q = 2.95$ mm/s and $\delta = 1.10$ mm/s, respectively. The Fe ions state of sample at all temperatures are ferrous (Fe$^{2+}$) ions. Also, LiFePO$_4$ sample was confirmed the permeability and permittivity by network analyzer (NA, Agilent E5071C).

Fig. 1. Mössbauer spectra of the LiFePO$_4$ at various temperatures.