ABSTRACT BOOK

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23	02:40 PM	S1:QUB9	Experimental Analysis of Curved FRP Panel Behavior	**Dr. Woo-tai Jung** (KICT)
24	02:40 PM	S2:UJP8	Incorporation and effect of inorganic polyphosphate on the surface of implant materials by bio-inspired supramolecular nanofilm	**Dr. Xinyuan Xu** (Sichuan University)
25	02:40 PM	S3:6QJN	Preparation and Characterization of Nonwoven for Recyclable Cushion Material	**Dr. Yeong Og Choi** (Technical Textile & Materials Group, KITECH)
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28	02:40 PM	S3:S7S9	Synthesis of Basic Microgel with Polyethyleneimine Brushes and It's Template Function in mineralization	**Mr. Daiki Soma** (Kanagawa University)
29	02:40 PM	S1:SYXP	SiO2@TiO2 core-shell aerogels: Enhanced thermal stability and photocatalytic activity	**Mr. Elias Paiva Ferreira Neto** (Universidade de São Paulo)
30	02:40 PM	S3:SYV5	Carbon nanofibers based wearable patch for bio potential monitoring	**Mr. Hachul Jung** (KBIO Health)
31	02:40 PM	S1:KWDF	Processing and characterization of LaFeSi compounds synthesized by ball-milling technique	**Mr. Hiroki Takama** (Shibaura Institute of Technology (SIT))
32	02:40 PM	S1:2SN4	Laminated composite for plain bearings	**Mr. Ivan Sipatov** (Russian Academy of Sciences)
33	02:40 PM	S3:YQSY oster	Inkjet Printing of Polyethylene Glycol as a Sacrificial Material for Flexible Microsystems	**Mr. Jing Ouyang** (Rochester Institute of Technology)
34	02:40 PM	S1:HE5V	Water-soluble carbohydrate substituted A3B type tetrapyrazinoporphyrazine Zn complexes	**Mr. Jong Min Park** (Hanyang University)
35	02:40 PM	S2:G4S9	Threshold Voltage Modulation of Polymer Transistors by Photo-induced Charge-Transfer between Donor-Acceptor Dyad	**Mr. Juho Kim** (Hannam Unversity)
36	02:40 PM	S1:PX47	Magnetic properties and hyperfine interaction of Y-type BaSrCo2(Fe0.9Al0.1)12O22 hexaferrite investigated by Mössbauer spectroscopy	**Mr. Jung Tae Lim** (Kookmin University)
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39	02:40 PM	S3:NNC3	Chiral transfer systems based and mediated on silica frames	**Mr. Seiji Tsunega** (Kanagawa university)
40	02:40 PM	S1:WEPJ	Synthesis of Sulfonamide Derivatives and Application to Water Treatment System	**Mr. Seong Ik Jeon** (RIAM, Seoul National University)

Magnetic properties and hyperfine interaction of Y-type $BaSrCo_2(Fe_{0.9}Al_{0.1})_{12}O_{22}$ hexaferrite investigated by Mössbauer spectroscopy

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Y-type hexagonal ferrite has been studied for magnetoelectric effect in interesting physics properties. Recently, some of Y-type hexagonal ferrite single crystal such as $Ba_{0.5}Sr_{1.5}Zn_2(Fe_{0.92}Al_{0.08})_{12}O_{22}$, and $BaSrCo_2Fe_{11}AlO_{22}$ have been extensively studied due to the reduction of the in-plane orbital moment via Aluminum substitution[1]. Therefore, $BaSrCo_2(Fe_{0.9}Al_{0.1})_{12}O_{22}$ polycrystalline sample was synthesized by polymerizable complex method and investigated the magnetic properties and hyperfine interaction by using x-ray diffractometer (XRD), vibrating sample magnetometer (VSM) and Mössbauer spectrometer. From the refined XRD patterns of $BaSrCo_2(Fe_{0.9}Al_{0.1})_{12}O_{22}$, the crystal structure was confirmed to be rhombohedral structure (space group : *R-3m*), and lattice constant a_0, c_0, and bulk density were 5.87, 43.55 Å and 5.21 g/cm^3, respectively. Base on the field-dependent magnetization curves of $BaSrCo_2(Fe_{0.9}Al_{0.1})_{12}O_{22}$ sample up to 15 kOe at various temperatures ranging from 4.2 to 295 K, showing that sample was not saturated and magnetic phase transitions from conicalmagnetic state to ferromagnetic state with increasing applied field. The magnetization at 15 kOe (M_{15kOe}) and coercivity (H_c) of $BaSrCo_2(Fe_{0.9}Al_{0.1})_{12}O_{22}$ sample decrease from M_{15kOe} = 24.93 emu/g, H_c = 775.23 Oe at 4.2 K to M_{15kOe} = 21.08 emu/g, H_c = 428.43 Oe at 295 K. We have obtained Mössbauer spectra of sample at various temperatures ranging from 4.2 and 700 K. From the analyzed Mössbauer spectra, we expect that non-magnetic Al ions preferentially occupy the up-spin site of $18h_{VI}$, $3b_{VI}$, and $3a_{VI}$.

Keywords: Y-type hexaferrite, Mössbauer spectroscopy, Spin transition

[1] NAKAJIMA, T., TOKUMAGA, Y., MATSUDA, M., DISSANAYAKE, S., FERNANDEZ-BACA, J., KAKURAI, K., TAGUCHI, Y., TOKURA, Y., and ARIMA, T. 2016. Magnetic structures and excitations in a multiferroic Y-type hexaferrite $BaSrCo_2Fe_{11}AlO_{22}$. *Phys. Rev. B* 94, 195154.

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