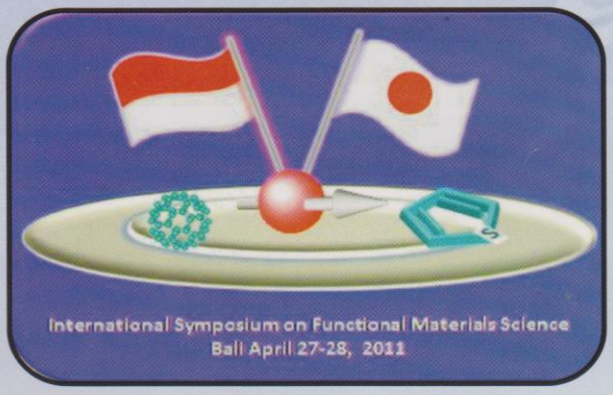
INTERNATIONAL SYMPOSIUM ON FUNCTIONAL MATERIALS SCIENCE

The Development of Advanced Research on Materials Science in Indonesia

April 27-28, 2011
The Kertagosa Meeting Room Nusa Dua Beach Hotel
Bali, Indonesia

PROGRAM AND ABSTRACTS



Organized by

ITS, ITB, UNPAD and RIKEN Nishina Center

ITS Institut Teknologi Sepuluh Nopember

INSTITUT TEKNOLOGI BANDUNG 1920

UNIVERSITAS PADJADJARAN

RIKEN

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Supported by
RIKEN Nishina Center for Accelerator-Based Science
Directorate General of Higher Education Indonesia (DIKTI)
Institut Teknologi Sepuluh Nopember, Institut Teknologi Bandung,
Universitas Padjadjaran

Contents

PROGRAM

Program

1st day (27 April 2011)		
8:30- 8:45	Welcome Opening Greeting	Darminto (ITS) Prof. Jazidie (DIKTI)
8:45- 9:00 9:00- 9:15	Report of Collaboration for MOU (Japanese) and Purpose of the Symposium (The RIKEN-RAL Muon Facility and International Collaborations between RIKEN and ITS, UNPAD, ITB) Report of Collaboration for MOU (Indonesian)	I. Watanabe (RIKEN) M. O. Tjia (ITB)
9:15- 9:45	Greeting from RIKEN Nishina Center and Rectors of ITB, ITS and UNPAD	
9:45- 10:00	Signing Ceremony	
10:00-10:15	***Coffee Break***	
10:15-10:45	Overview of Nishina Center & RIBF	H.Ueno (RIKEN)
10:45-11:15	Overview of Muon	Y. Kuno (Osaka U.)
11:15-11:45	In-Beam Mossbauer spectroscopy using a RI beam	Y. Kobayashi (RIKEN)
11:45-13:00	***Lunch with Poster Session***	
13:00-13:30	β-NMR at RIBF	T. Mihara (Osaka U.)
13:30-14:00	μSR on Cu-Based Superconductors	Y. Koike (Tohoku U.)
14:00-14:15	Indonesian Speaker 1	Suasmoro (ITS)
14:15-14:30	High Magnetic Specific Heat of $La_{0.5}Ca_{0.5}MnO_3$ with Cu doped	Budhy Kurniawan (UI)
14:30-15:00	Nucleation And Growth of Cu Thin Film on Silicon Base By Excimer Laser Annealing	Noriah Bidin (UTMalaysia)
15:00-15:15	***Coffee Break***	
15:15-15:45	μSR and NMR on Fe-Based Superconductors	Y. Kohori (Chiba U.)
15:45-16:00	Magnetic Properties of Barium Hexaferrite Thin Films Grown By Pulsed Laser Deposition	T. Saragi (Unpad)
16:00-16:15	Compositional and Thermal Stability Studies of α-Al2O3/Al2TiO5-MgAl2O4 FGMs Produced by Multiple-Infiltration Method	Suminar Pratapa (ITS)
16:15-16:30	Preparation and Characterization of Artificial dental using Porcelain and Metal Alloy (Co-Cu)	Nurlaela Rauf (Unhas)
16:30-16:45	The Role of P-Type Dopant Induced of Delafossite $CuCr_{1-x}M_xO_2$	M. Diantoro

	System and Their Structures and Magnetic Properties	(UN Malang)
16:45-17:00	Long-range ordering in $(C_6H_5CH_2CH_2NH_3)_2CuCl_4$ hybrid	A. A. Nugroho (ITB)
17:00- 17:15	Ba-Hexaferrite: Permanent Magnets and Microwave Absorber	A. Manaf (UI)
17:15-17:30	The Use of Glass Waste as Friction Modifier in the Fabrication of Composite Brake Friction Materials: A Preliminary Report	Sutikno (UN Semarang)
17:30-17:45	A Transmission Electron Microscopy Study of $RBaM_2O_{6-\delta}$ [R=Y, Tb, Gd;M=Mn,Co]	Subakti (U Complutense de Madrid)
19:00-	***Dinner***	

2nd Day (28 April 2011)		
8:30- 9:00	μSR on Semiconductor and J-PARC	K. Shimomura (J-PARC)
9:00- 9:15	Palladium Silicide Thin Layers Growt on Si(110) Substrates	R. Suryana (UNS)
9:15-9:30	Enhance Mechanical Properties of Al/SiCp Composite by SiO_2 Deposition on SiC Particles	M. Zainuri (ITS)
9:30-9:45	Opportunities and application of liquid and aerosol processing: preparation of functional nanoparticles	C. Panatarani (Unpad)
9:45-10:00	Structural and Optical Study on Spun Films Lead Phthalocyanine (PbPc)	Yanuar (Unri)
10:00-10:15	***Coffee Break***	
10:15-10:45	μSR on Exotic Magnetism of Alkali-Metal Clusters in Zeolite	Y. Nozue (Osaka U.)
10:45-11:15	Novel Functionalities in Oxide Interfaces and Heterostructures	Ariando (NUS)
11:15-11:30	Development on Liquid and Aerosol Processes Instrumentation Systems	D. Hidayat (Unpad)
11:30-11:45	The I-V Characteristic and Crystal Structure of $Nd_{1-x}Ba_{2-x}Cu_3O_7$ Oxide Alloy Developed by Solid State Reaction Method	E. H. Sujiono (UN Makasar)
11:45-12:00	Electrochemical Properties of Conductive Diamond Electrodes Modified by Ion Implantation Method	Ivandini Tribidasari (UI)
12.00-13:00	***Lunch with Poster Session***	
13:00-13:30	The ISIS Facility and Application of Implanted Muon Techniques in Functional Materials Science	F. L. Pratt (STFC, ISIS)
13:30-14:00	μSR on Organic Mott Insulator	H. Taniguchi (Saitama U.)
14:00-14:15	Effect of Low Doses UV Radiation on Microporous Polysulfone	N. K. Rupiasih (Udayana)
	Membranes during Sterilization Process	
14:15-14:30	Nanocrystalline of Lanthanum Manganite Based by Sonication Assisted Milling for Microwave Absorber Materials	Mas Ayu Elita Hafizah (UI)
14:30-14:45	Uniform Counting Sequences and Some Related Problems	I.N. Suparta (UP Ganesha)

14:45-15:00	The Effect of Substrates Surface on Molecular Organization of DR 19 Thin Film	H. Taunaumang (UN Manado)
15.00-15.15	Preparation and Characterization of Titania as Functional Material for Photocatalysis	Jarnuzi Gunlazuardi (UI)
15:15– 15: 30	*Coffee Break*	
15:30-16:00	Infrared Studies of Organic Solar Cells	Y. Furukawa (Waseda U.)
16:00-16:15	Some Studies to Improve the Performance of Bulk-Heterojunction Solar Cells	Ayi Bahtiar (Unpad)
16:15-16:30	Electrical Characteristics of Hybrid Solar Cell based on Poly(alkylthiophene) and sol-gel derived ZnO	Rahmat Hidayat (ITB)
16:30-16:45	μSR Study of Charge Carrier Diffusion in Regio-regular Poly(3-alkylthiophene)	Risdiana (Unpad)
16.45-17.00	Challenge of Ion Selective Membran as Quality Control of Herbal Products	Kuwat Triyana (UGM)
17:00-	Concluding Remarks	R. E. Siregar (Unpad)

POSTER SESSION

Time	Title	Author
12:00-13:00	Photosensitizing Effect of ITO/Chlorophyll-a/TiO_2/Al Structure of Heterojunction Chlorophyll-a and TiO_2 Nanoparticle Ferromagnetism in BSCCO Nano-Superconductors	Agus Supriyanto (UNS, UGM)
	Synthesis and Characterization of Ferrofluid $Fe_{2.6}Mn_{0.4}O_4$ and $Fe_{2.2}Mn_{0.8}O_4$ Nanoparticles	Ahmad Taufiq (UNMalang)
	Fabrication and Performance of Organic Solar Cells Based on Regioregular Poly(3-hexylthiophene):PCBM and Metal-Free Phthalocyanine:C60	Andria Kurniawan (Waseda University, Japan)
	Determination of Muons Interaction Sites in La_2CuO_4 Antiferromagnetic Phase using Magnetic Dipolar Interactions	Budi Adiperdana (RIKEN)
	A Chemical Method for Preparation of Nano Titania *via* A Core Shell Structure	Destya E. Kusumo
	Lattice Boltzmann Simulation for fluid transport in Gas Diffusion Layer of PEM Fuel Cell	Irwan Ary Dharmawan (UNPAD)
	Current-Voltage Response of Poly(3,4-ethylenedioxythiophene): Poly(styrenesulfonate) Thin Film to Ammonia Gas	La Aba (UGM)
	Optical Properties of Material Photonic Crystal Opal and Inverse Opal	Lusi Safriani (UNPAD)
	Ferromagnetism in BSCCO Nano-Superconductors	Malik A. Baqiya (ITS)
	Grating Coupled Surface Plasmon Fabricated from Hybrid Polymer by Laser Interference Technique	Ryan Imansyah

ABSTRACT
ORAL

International Symposium on Functional Materials Science

The Development of Advanced Research on Materials Science in Indonesia

Nusa Dua, Denpasar, Bali, April 27-28, 2011

Organized by InstitutTeknologiSepuluhNopember, InstitutTeknologi Bandung, Universitas Padjadjaran and RIKEN Nishina Center for Accelerator-Based Science

Dr. Togar Saragi
UNPAD, Jl. Raya Bandung-Sumedang km.21
Sumedang West Jawa Indonesia

Dear Dr. Togar Saragi,

On behalf of organizing committee of International Symposium on Functional Materials Science, "The Development of Advanced Research on Material Science in Indonesia", we would like to invite you to attend the symposium. The symposium is held in Nusa Dua, Bali on April 27-28, 2011.The symposium covers a wide range of the functional material science fields including the nanotechnology and energy sciences. We believe that this direction definitely follows the main research pillars of DIKTI. We plan to invite 10 Japanese and 2 Europeans researchers, and also 50-70 Indonesian students and researchers from domestic universities. This symposium is not for only exchanging research achievements but also for creations new research collaborations among RIKEN, Japanese universities and more Indonesian universities. We expect to find out opportunities for students and young researchers to carry out their study in Japan collaborating with RIKEN and Japanese universities. We can accept one speaker from your university as an oral speaker. Also, we would like to encourage students who wish to be a researcher for material science to attend the symposium to have poster presentations. Please get contact with secretaries (Dr. Risdiana and Dr. Lusi Safriani) if you and your students wish to attend the symposium and to have presentations. We will arrange to send invitation letters for you. We wish that you are interested in this symposium and attend the symposium to create international collaborations between Japan and Indonesia.

Dr. Darminto
Chair (ITS, Indonesia)

Dr. Isao Watanabe
Co-chair (RIKEN, Japan)

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Magnetic Properties of Barium Hexaferrite Thin Films Grown By Pulsed Laser Deposition[1]

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Abstract

Barium hexaferrite $BaFe_{12}O_{19}$ (BaF) thin films have been prepared by pulsed laser deposition. The target was prepared by solid state reaction method and the films were depositied on *c*-plane (0001) sapphire substrates with KrF excimer laser at wavelenght of 248 nm and with an energy density of 2.16 J/cm^2. During deposition the repetition rate, the temperature, and the time for deposition were varied of: (2 Hz, 700°C, 15 minutes) or sample 5715, (5 Hz, 800°C, 15 minutes) or sample 5815, (5 Hz, 800°C, 30 minutes) or sample 5830, (2 Hz, 800°C, 30 minutes) or sample 2830 respectively. The crystal structures were measured by high resolution X-ray diffracometer (HR-XRD) and the grain size were calculated by Scherrer equation. The magnetic properties were measured using SQUID-vibrating sample magnetometer (SQUID-VSM) at a maximum 5kOe, and an atomic force microscope (AFM) was used to detected surface morfologi. The XRD measurement shows that the BHF phase was observed in the sample grown at 800°C with the calculated grain size were 11.41 nm (2830) and 15.38 nm (5815). The VSM measurement shows that the: M_s,M_r and moment were increase in the series of 5715 to 5830 to 5815 and to 2830, however the H_c maximum observe at series of 5715. An AFM image shows that the roughness average were 59.6 nm (5715), 24.6 nm (5815) and 36.9 nm (2830). After annealing at 1000°C for 2 h the magnetic properties was decrease. The effects of parameter deposition and grain size and its development in the future will be discussed relation to the magnetic characteristics.

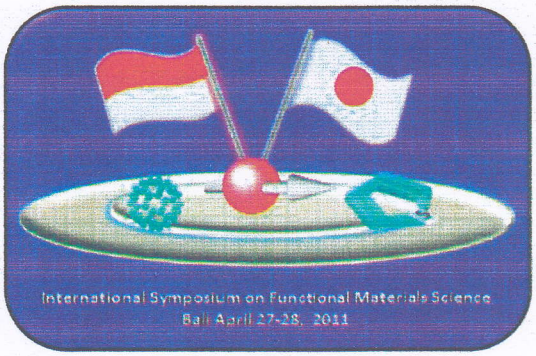
Key words: *barium hexaferrite, magnetization, remnant, saturation, coercive*

Introduction

Hexagonal ferrites are used widely as permanent magnets. This ferrites (ferrimagnetic transition-metal oxides) are electrically insulating, and therefore they are widely used in high-frequency applications, because an ac field does not induce undesirable eddy currents in an insulating material [1]. Barium hexaferrite, $BaO.6Fe_20_3$, is a known high performance permanent magnetic material [2], has the magnetoplumbite structure (hexagonal, P6/mmc) with cell dimensions a = 5.888 Å and c = 23.228 Å, and is ferrimagnetic with Tc = 723 K (=450°C) [3]. Barium ferrite thin films have a high Curie temperature, large magnetocrystalline anisotropy field H_k, large magneto-optic rotation [4-5] and large uniaxial anisotropy ~0.33 MJ.m^{-3} parallel to the c-axis [6]. Owing to a high characteristics, these ferrites are especially suitable for next generation magneto-optical (MO) disk material [7], millimetre-wave filters, phase shifters and non-reciprocal devices with frequency tuning provided by an external magnetic field [8-10], Coplanar Waveguides (CPWs) in microwave integrated circuits (MICs) and in monolithic microwave integrated circuits (MMICs) [11-14] due to lower level of media noise in comparison with Co-based alloy [15]. The narrow transition width being required for high

[1] Presented on International Simposium on Functional Material Science (ISFMS) The Development of Advanced Research on Materials Science in Indonesia, at Nusa Dua Bali pada tanggal 27-28 April 2011

CERTIFICATE



THIS CERTIFICATE IS HEREBY PRESENTED TO:

Togar Saragi

(Universitas Padjajaran)

as

Presenter

International Symposium on Functional Material Science

The Development of Advanced Research on Materials Science in Indonesia

Nusa Dua, Denpasar, Bali

April 27-28, 2011

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Chair

Dr. Darminto
(ITS, Indonesia)

Co-chair

Dr. Isao Watanabe
(RIKEN, Japan)