Summary of ICF 11

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Abstract

The 11th International Conference on Ferrites, ICF11, was successfully held on April 15-19, 2013, at the Okinawa Convention Center, Okinawa, Japan organized by The Japan Society of Powder and Powder Metallurgy. ICF 11 covered a broad range of topics related to the science and technology of ferrites and related materials.

I. INTRODUCTION

The 11th International Conference on Ferrites, ICF 11, was held at the Okinawa Convention Center, Okinawa, Japan organized by The Japan Society of Powder and Powder Metallurgy on April 15-19, 2013. The ICF 11 was initially scheduled to be held in Nara, Japan, in 2011 but was postponed once due to the Great East Japan Earthquake. The organizing committee rescheduled the conference for April 2013. Earlier ICF's were held in Kyoto (1970, 1980, and 2000), Paris (1976), San Francisco (1984 and 2004), Mumbai (former Bombay) (1989), Tokyo (1992), Bordeaux (1996), and Chengdu (2008). The ICFs have been providing a forum for exchanging information on the fast-developing science and technology of ferrites and related materials that promise to be important for the electronic industry. Presently, the exciting and central subject of ferrites is spreading beyond the traditional boundaries of physics and chemistry, electronics and devices, and biology and medical sciences. To meet the pressing need to hold a conference on the key issues not only of ferrites but also of other advanced materials, ICF 11 covered a broad range of topics related to the science and technology of such materials.

II. SPONSORSHIP

Organized by

The Japan Society of Powder and Powder Metallurgy

Supported by

The Science Council of Japan

The Ministry of Education, Culture, Sports, Science and Technology, Japan

Commemorative Organization for the Japan World Exposition ('70), Japan

The Murata Science Foundation, Japan

Cooperated by

The Magnetic Society of Japan

The Physical Society of Japan

The Japan Society of Applied Physics

The Institute of Electrical Engineers of Japan

IEEE Japan Council, Magnetics Society, Japan Chapter

The Electrochemical Society of Japan

The Institute of Electronics Information and Communication Engineers

The Chemical Society of Japan

The Japan Institute of Metals

The Ceramics Society of Japan

Technical Sponsoring by

American Ceramics Society

* Co-chairmen of Program Committee, ICF 11

III. TECHNICAL PROGRAMS

The ICF 11 included 3 plenary talks, 4 symposia, 16 oral sessions and 2 poster sessions. During the conference period, 260 papers, consists of 109 oral presentations and 151 poster presentations were performed. Time table of the ICF 11 is indicated as Table.1. Some snapshots during the conference are indicated in Fig.1.

Plenary Talks

Ramamoorthy Ramesh, University of California, Berkeley, USA

“Electric Field Control of Magnetism Using Multiferroics”

Hideo Hosono, Tokyo Institute of Technology, Japan

“Iron-Based Superconductors: Current Status”

John Paul Attfield, University of Edinburgh, UK

“The Verway Phase of Magnetite - a Long-Running Mystery in Ferrites”

Symposia

- Biomedical applications of magnetic particles and structures
- Multiferroic materials: physics and applications
- Hard magnetic materials and their applications
- Environmental preservation by using magnetic particles and superconducting magnets

(a) Opening Session

(b) Plenary Talk

(c) Oral Session

(d) Poster Session

Fig. 1 Snapshots of ICF 11

ICF 11 Program Time Table

15 April		16 April		17 April		18 April		19 April
		Room A1	Room A2	Room B1	Room A1	Room A2	Room B1	Room B1
9:00-10:30		Opening Ceremony (45 min)			17aA1-I-* Soft Magnetic Materials I	17aA2-I-* Symposium 4a Environmental Preservation by Using Magnetic Particles and Superconducting Magnets	17aB1-I-* Symposium 3a Hard Magnetic Materials and their Applications	18aB1-I-* Composites, Crystal Growth and Resources in Ferrite Industry I
10:30-10:50		16aL-1 Plenary Lecture R. Ramesh (50 min)			17aA1-II-* Soft Magnetic Materials II	17aA2-II-* Symposium 4b Environmental Preservation by Using Magnetic Particles and Superconducting Magnets	17aB1-II-* Symposium 3b Hard Magnetic Materials and their Applications	18aA2-I-* Application of Magnetic Particles for Environmental Preservation I
10:50-12:20		16aL-2 Plenary Lecture H. Hosono (50 min)						18aA2-II-* Application of Magnetic Particles for Environmental Preservation II
12:20-14:00		16aL-3 Plenary Lecture J.P. Attfield (50 min)						18aB1-II-* Composites, Crystal Growth and Resources in Ferrite Industry II
14:00-15:30		16pA1-I-* Symposium 1a Biomedical Application of Magnetic Particles and Structures	16pA2-I-* Physics, Chemistry and Superconductivity I	16pB1-I-* Symposium 2a Multiferroic Materials	17pA1-I-* Biological and Medical Applications	17pA2-I-* Microwave Ferrites and EMC I	17pB1-I-* Spintronics	18pB1-I-* Information Storage and Sensing Technology
15:30-15:50								
15:50-17:20	Registration (16:00-19:00)	16pA1-II-* Symposium 1b Biomedical Application of Magnetic Particles and Structures	16pA2-II-* Physics, Chemistry and Superconductivity II	16pB1-II-* Symposium 2b Multiferroic Materials	17pP-* Poster Session (B3-B4, B5-B7) (120 min) (15:50-17:50)			
17:20-17:30		Break (17:20-17:30)			Closing Ceremony (16:00-)			
17:30-19:30	Get together (17:00-19:00)	16pP-* Poster Session (B3-B4, B5-B7) (120 min) (17:30-19:30) (Biersnabe, served with light meal)		Break (17:50-18:30)				
				Evening for Enjoying Okinawa Traditional Culture (Laguna Garden Hotel) (18:30-21:00)				
	Registration 16:00-19:00	Registration 9:00-17:00		Registration 9:00-17:00 18:00-20:00 (Laguna Garden Hotel)				Registration 9:00-14:00
		Exhibit 12:30-19:30 Room B5-B7		Exhibit 9:00-18:00 Room B5-B7				Exhibit 9:00-14:00 Room B5-B7

IV. AWARDS OF ICF 11

Takeshi Takei Award

Takeshi Takei Award was given to Prof. C. M. Srivastava of the Indian Institute of Bombay – the father of ferrites in India – for his contribution to ferrites in India and support for the ICF conferences.

Young Researcher's Award

This award was given to outstanding papers presented at ICF 11, in either oral or poster format, by researchers not older than 35 years. Award winners are as follows.

Ilsiyar Ildusovna Nigmatullina (Kazan Federal University)

“Measurement of size of ferromagnetic clusters in $Tm_{0.65}Sr_{0.35}Mn_{1-x}Fe_xO_3$ according to the ESR spectra” [16pP-11]

Tomohiro Nozaki (Tohoku University)

“Orientation Control of Cr_2O_3 Thin Film Crystallized by Post-annealing” [16pP-30]

Juji Kato (FDK Corporation)

“Magnetic Properties of Bi and Si Oxides-doped M-Type Barium Ferrite” [17pP-19]

Naonori Sakamoto (Shizuoka University)

“Synthesis of bio-compatible (La,Sr) MnO_3 -HAp hybrid particles and their hyperthermia properties” [17pP-67]

Siti Aisyah Binti Shamsudin (Kyoto University)

“Introduce the Safe Capsule for CdS Quantum Dots as Bio-labeling Device” [17pP-69]

Hajime Hojo (Tokyo Institute of Technology)

“Crystal Structure and Electrical Properties of $(1-x)BiFeO_3-xBiCoO_3$ Thin Films Prepared by Pulsed Laser Deposition” [18aA1-I-5]

Tomohiko Niizeki (University of Tsukuba)

“Large Perpendicular Magnetic Anisotropy in Fe-rich Cobalt Ferrite Epitaxial Thin Film Grown by a Reactive Magnetron Sputtering Technique” [18pB1-I-5]

New Product & Novel Technology Award

This award was given for exceptional “new products” and “novel technologies” related to ferrites and related materials presented at ICF 11 in oral/poster sessions or technical exhibit. Award winners are as follows.

Y. Namiki (The Jikei University School of Medicine)

“A Rapid and Reliable Elimination System for Radioactive Cesium using Magnetic Nanocomposites”

A. Sandhu, T. Takamura (Toyohashi University of Technology)

“MISA-Diagnostic System Medical Diagnostic Protocol based on Magnetically Induced Self-Assembly of Superparamagnetic Beads”

M. Inoue, H. Takagi, P. B. Lim (Toyohashi University of Technology)

“Novel 3D Display using Garnet-based Magnetophotonic Crystals with Large-Number Magneto-Optic Nano-Pixel”

Y. Ichiyanagi, H. Takeuchi, D. Shigeoka (Yokohama National University)

“Optimization of Ferrite Nanoparticles as an Agent for Hyperthermia Treatment”

K. Hagita, H. Kobayashi, F. Sato, Y. Yazaki, M. Sonehara, T. Sato, T. Watanabe, N. Matsushita, T. Fujii, H. Shimizu, K. Kobayashi (Shinshu University, Tokyo Institute of Technology, SHINKO Electric Industries)

“Magnetic Properties of Spin-sprayed Ferrite Film Deposited on Glass/Epoxy Build-up Layer in Organic Interposer Substrate”

E. Wada, Y. Shirahata, M. Itoh, M. Yamaguchi, T. Taniyama (Tokyo Institute of Technology, Nagoya University)

“Electron Spin Transmission due to Spin-Filtering Effect in Fe_3O_4 -based Spin-LED”

M. Naoe, N. Kobayashi, S. Ohnuma, T. Iwasa, K. Ishida, H. Masumoto, K. I. Arai (Research Institute for Electromagnetic Materials, Tohoku University)

“Nano-Granular Soft Magnetic Thin Films Having Both Ultra-high Resistivity and Magnetization More Than Ferrite”

S. Takeda, S. Motomura, T. Hotch, H. Suzuki (Magnontech, Ltd., KEYCOM Corp.)

“High Frequency Magnetic Measurement System from 100 kHz to 10 GHz”

T. Hasegawa, R. Nakajima, S. Ichiguchi, T. Wada, M. Koshino, T. Okada (Murata Manufacturing Co., Ltd.)

“A Miniaturized Low Loss Lumped Element Isolator Operating in Weak Magnetic Field below Ferromagnetic Resonance”

T. Yasuoka, S. Matsuzawa, T. Chiba, K. Murai, Y. Yamauchi, K. Harada (NEC TOKIN Corporation)

“High Impedance MnZn Ferrite “S15H” and Common Mode Choke Coil “SCR” ”

T. Ishibashi, K. Sato, M. Nagai, A. Mizusawa, T. Kosaka, T. Nagane, M. Kawahara (Nagaoka University of Technology, Japan Science and Technology Agency, Tokyo University Agriculture and Technology, Kojundo Chemical Laboratory Co., Ltd.)

“MOD Solutions for Magnetic Garnet Films”

Y. Manabe, T. Mizokami, T. Nishimoto (Kobe Steel, Ltd., Shinko Techno Engineering Co., Ltd.)

“DIP (Dry Integrated Press) Equipment”

H. Ogawa, A. Tanaka, H. Matsuura, K. Tanaka, H. Kishi, K. Kawano (TAIYO YUDEN Co., Ltd.)

“Power Inductor using New Metal Composite Material MCOIL(TM)”

Yamazaki Yohtaro Memorial Student Award

This award was given for outstanding papers presented by students at ICF 11 in either oral or poster formats. The Award is made in commemoration of the late Dr. Yamazaki Yohtaro, Emeritus Professor of Tokyo Institute of Technology, who has made outstanding achievements in ferrite technology and made great contributions to ICF 6 as Social Arrangements, and ICF 8 as Program Chairman, and for a limited period as Secretary of ICF 11. Dr. Yohtaro Yamazaki passed away in February 2012 at 66 years old. Award winners are as follows.

Masaki Imai (Kyoto University)

Magnetic Properties of Itinerant Ferromagnet LaCo_2P_2 [16pP-19]

Aiko Kawahito (Hokkaido University)

Fabrication of Fe Nanowires by Thermal CVD Method [16pP-23]

JeongSoo Hong (Tokyo Institute of Technology)

The Crystallographic Property of Fe_3O_4 layer Deposited Successuvely on ZnO layer by Spin-Spray Method [16pP-39]

George Kogias (Centre for Research and Technology-Hellas)

New MnZn Ferrites with High Saturation Flux Density [17aA1-I-4]

Marie Yoshikiyo (The University of Tokyo)

Synthesis, Magnetic Properties, and Theoretical Studies of e- Fe_2O_3 [17pP-48]

Hiroki Morita (Tokyo University of Science)

Design and Fabrication of High-Pressure Reaction Vessel for High-throughput Magnetic Materials Exploration [17pP-58]

Ryo Sakuma (Okayama University)

Characterization of Microtubule Material Consisting of Iron Oxide Nanoparticles Produced by Bacteria [17pP-62]

Shofu Matsuda (Waseda University)

Induction of Cell Death and Uptake in Mesothelioma Cells by Magnetite Nanoparticles [17pP-70]

Ruzhi Zhang (Tokyo Institute of Technology)

Magnetic and optical nanohybrids composed of FePt/Au nanoshell [17pP-75]

Takao Kashima (Tokyo Institute of Technology)

Fabrication of FeO films with (100) orientation for underlayer of CoFe_2O_4 thin film [18aB1-II-3]

V. EXHIBITS

Exhibits were performed by the following exhibitors throughout the conference period. (Alphabetical order)

EXHIBITORS of ICF 11

BASF Japan Ltd.
EPSON ATMIX CORPORATION
FDK CORPORATION
FUJITSU LIMITED
KEYCOM Corporation
Kobe Steel, Ltd
KOJUNDO CHEMICAL LABORATORY CO., LTD.
MITSUWA FRONTECH CORP.
NEC TOKIN Corporation
Riedhammer GmbH.
SINTOKOGIO, LTD.
TAIYO YUDEN CO., LTD.
TDK Corporation
UNICO LTD

VI. PARTICIPANTS OF ICF 11

There were 286 participants from 19 countries. The per country list is indicated in Table 2.

Table 2 Per country list for participants in ICF 11.

Austria	2	Japan	219
China	6	Korea	13
Egypt	1	Latvia	1
Finland	1	Malaysia	1
France	3	Mexico	1
Germany	8	Poland	1
HongKong	2	Taiwan	5
India	6	U.K.	5
Indonesia	1	U.S.A.	9
Italy	1		
		Total	286

VII. TECHNICAL VISITS OF ICF 11

Technical Visits, the final event of ICF 11, to Okinawa Churaumi Aquarium took place on April 19. The aquarium is one of the most attractive facilities of the Okinawa Ocean Expo Park located at the waterfront of north part of Okinawa Main Island. About 70 participants of ICF 11 took part in this technical visit. The special scientific lecture "Research activity in Okinawa Churaumi Aquarium - Contribution to the Science of Conservation Biology" was given by Dr. Keiichi Sato of Okinawa Churaumi Aquarium. More detailed information about the technical visit is given in "Social Activities (Get-Together, Banquet, Technical Visit) Held in ICF 11".

VIII. COMMITTEE MEMBERS

The ICF International Committee Members

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M. Sugimoto (Japan)

Honorary Members:

V. Cagan (France), A. Goldman (U.S.A.), C.M. Srivastava (India)

Members:

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Contribution

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Nobuyuki Hosoito (Nara Institute of Science and Technology)

Local Arrangement

(Okinawa) Eiji Kaneko (Ryukyu University)

Kenichi Yamamoto (Ryukyu University)

Social Arrangement

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