



5th International Conference on
Ferromagnetic Shape Memory Alloys
PROGRAM AND ABSTRACTS

September 5 – 9, 2016

Sendai, JAPAN

ICFSMA'16

Website: <http://www.material.tohoku.ac.jp/~icfsma/>

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Welcome Message

On behalf of the conference committee it is a great pleasure and honor to welcome you at the 5th International Conference on Ferromagnetic Shape Memory Alloys (ICFSMA) here in Sendai, Japan, September 5 - 9, 2016.

Sendai city was founded by the lord "Date Masamune" with Sendai Castle on Mt. Aoba-yama in 1601. Nowadays, Sendai, which has a population of about one million, is the central city in Tohoku region of Northeast Honshu-Island. Sendai is well-known as "City of Trees" (杜の都, Mori no Miyako), where you can find zelkova trees in the central area of the city. We hope you can enjoy your stay in our lovely city, Sendai, and you can share your exciting recent results on ferromagnetic shape memory alloys to all the participants of our conference.

Here, we would like to gratefully acknowledge the financial supports for the conference from The New Technology Development Foundation, The Murata Science Foundation, Kato Foundation for Promotion of Science, Aoba Foundation For The Promotion of Engineering and Intelligent Cosmos Academic Foundation. Substantial support was received from Furukawa Techno Material Co., Ltd. and Tohoku University. We also would like to express our special thanks to Sendai Tourism, Convention and International Association for their assistance.

Sincerely,



Ryosuke Kainuma



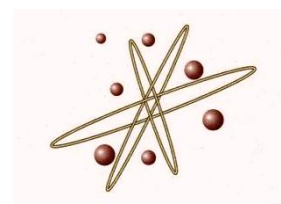
**Aoba Foundation
For The Promotion of Engineering**

**Sendai Tourism,
Convention and
International Association**

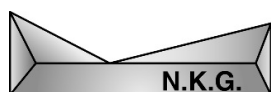
公益財団法人 仙台観光国際協会
<http://www.sentia-sendai.jp>



Kato Foundation for
Promotion of Science



Intelligent Cosmos
Academic Foundation



The Japan Institute of
Metals and Materials



The Iron and Steel
Institute of Japan



Scope

The aim of the conference is to generate an overview of world-wide research and development in the field of magnetic shape memory alloys and related phenomena. Emphasis will be given to fundamental studies expanded to the related fields and the practical utility of Ferromagnetic Shape Memory Alloys (FSMAs). By presentation and discussion of the most recent results covering both fundamental and applied aspects of FSMAs, this conference will provide an inspiring environment for developing new ideas, forging collaborations, meeting old and making new friends.

Topics

- A. Basic phenomena and theory
- B. Novel materials and materials design
- C. Correlation phenomena between magnetic and martensitic transformations
- D. Strain glass and related phenomena
- E. Magnetomechanics and caloric properties
- F. Thin films and microsystems
- G. Foams/constructs and composites
- H. Modeling and simulation from the atomic to the micro scale
- I. Processing and application

International

Conference Committee

R. Kainuma	(Japan)
Chair of ICFSMA'16	
F. Albertini	(Italy)
S. Besseghini	(Italy)
V. A. Chernenko	(Spain)
P. Entel	(Germany)
S. Fähler	(Germany)
S. -P. Hannula	(Finland)
O. Heczko	(Czech Republic)
L. Hirsinger	(France)
R. James	(USA)
I. Karaman	(USA)
P. K. Mukhopadhyay	(India)
P. Müllner	(USA)
A. Planes	(Spain)
X. Ren	(China and Japan)
L. Schultz	(Germany)
A. Sozinov	(Finland)
K. Ullakko	(Finland)
G. H. Wu	(China)

Local Committee

R. Y. Umetsu	(Tohoku University)
T. Omori	(Tohoku University)
X. Xu	(Tohoku University)
M. Nagasako	(Tohoku University)
Y. Murakami	(Kyushu University)
H. Miki	(Tohoku University)
K. Han	(Tohoku University)
E. Kamakura	(Tohoku University)
Y. Sonobe	(Tohoku University)

Social Program

Mon., September 5

- 14 : 00 Laboratory Tour
 - Institute for Materials Research (IMR)
- 17 : 00 Welcome Reception
 - Hotel Metropolitan Sendai (Seiun)

Thu., September 8

- 12 : 20 Conference Tour (Matsushima Bay Cruises)
 - Buses start at 12:20 from the Hotel Metropolitan Sendai -
- 18 : 00 Conference Dinner at Matsushima Bay
 - Hotel Matsushima Ichinobo

Practical Information for Oral and Poster Presentations

Oral presentations :

Oral sessions will consist of **invited talks (presentation: 20min, discussion: 5min)** and **contributed talks (presentation: 10min, discussion: 5min)**. There are no parallel sessions. All presentations will be given in English. In the main conference hall “Akebono, 曙” (Hotel Metropolitan Sendai), a Windows-based computer (PowerPoint and Acrobat Reader) and a projector will be available.

The authors can either bring their files on a USB flash memory or use their own laptops. All authors are asked to test their presentation in the break before their session starts.

Please bring your own adapter because only VGA port will be provided.

Poster presentations :

Poster session will take place in the room “Seiun, 星雲” of the conference hotel. Posters must fit with **a rectangle W 90 cm and H 120 cm** (A0 size: W 84.1 cm and H 118.9cm, portrait format). Poster walls are numbered according to the poster numbers. The staff will provide the authors with pins to mount their posters. **The poster session will be held at 16:00 - 18:30 on Tuesday.** We kindly ask **the presenters to mount your poster on the board during lunch time on Tuesday** and **to remove during lunch time on Wednesday.**

Conference Map

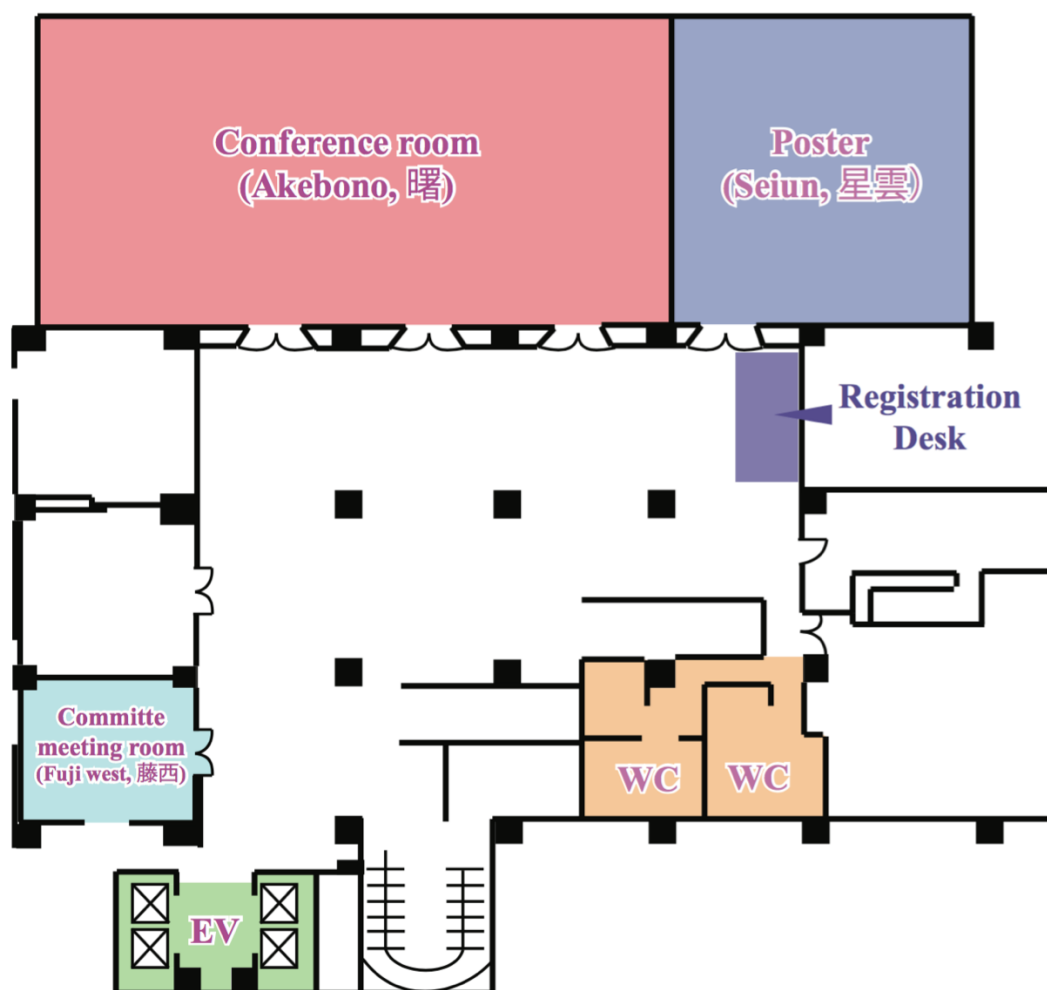
Main room :

Hotel Metropolitan Sendai 3rd floor “Akebono, 曙”

Poster session :

Hotel Metropolitan Sendai 3rd floor “Seiun, 星雲”

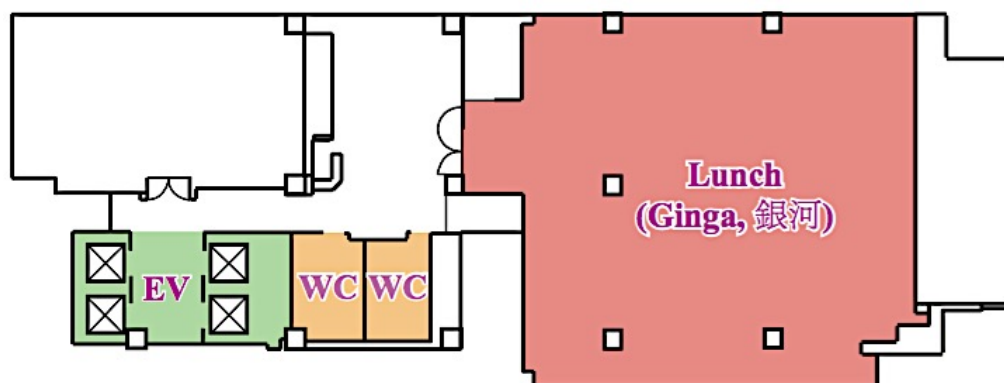
<3rd floor>



Lunch :

Hotel Metropolitan Sendai 21st floor “Ginga, 銀河”

<21st floor>



Conference Schedule

Time	Sep. 5 (Mon)		Sep. 6 (Tue)	Sep. 7 (Wed)	Sep. 8 (Thu)	Sep. 9 (Fri)	
8:30			Coffee time	Coffee time	Coffee time	Coffee time	
9:00			Opening	Basic / Theory III (9:00 ~ 10:40)	Magnetomechanics / Twin Boundary II (9:00 ~ 9:55)	Film (9:00 ~ 10:20)	
9:30			Basic / Theory I (9:10 ~ 10:35)				
10:00					Coffee break		
10:30			Coffee break	Coffee break		Coffee break	
11:00			Basic / Theory II (11:05 ~12:30)	Properties I (11:10 ~ 12:35)	Novel Alloys (10:25 ~11:50)	Composites / Processing (10:50 ~ 11:50)	
11:30							
12:00						Closing Lunch < Ginga >	
12:30					Lunch < Ginga >	Lunch < Ginga >	
13:00							
13:30							
14:00							
14:30	Laboratory Tour < IMR >		Caloric (14:00 ~ 15:40)	Properties II (14:00 ~ 15:50)	Conference Tour < Matsushima > (12:20 ~ 18:00)		
15:00							
15:30							
16:00	Registration < Sejun >		Coffee break				
16:30			Poster < Sejun > (16:00 ~18:30)		Magnetomechanics / Twin Boundary I (16:20 ~ 17:45)		
17:00							
17:30							
18:00	Welcome Reception < Sejun >				Conference Dinner < Matsushima > (18:00 ~ 20:00)		
18:30							
19:00							
19:30							
20:00							

Thursday, Sep. 8

Time

Conference Tour

**Lunch box will be served.
Please take a lunch box for yourself and get on the bus.**

Gathering point: Entrance of Hotel Metropolitan Sendai



**12:20 Leave
for Matsushima**

Get on the bus

Bus No.1 : up to 24 people

Bus No.2 : up to 40 people

Bus No.3 : up to 40 people

**13:20 Board
the sightseeing boat Matsushima Bay cruise**

**14:30 Arrive
at Matsushima Bay**

**Bus No.1: • Paint a Kokeshi (a wooden doll)
• Visit temples (National treasure)**

**Bus No. 2: • Experience Japanese Tea
• Visit temples (National treasure)**

**Bus No. 3: • Visit temples (National treasure)
• Experience Japanese Tea**

※Total walking distance is around 2-3 km. You may want to wear comfortable shoes, clothes and a cap for the tour.

17:30 Leave for Dinner

Back to the bus

Time

Conference Dinner

**18:00 Hotel Matsushima Ichinobo
Senshinkan “洗心館” 2F Dining room Sakura “さくら”**

20:00 Leave for Sendai

21:00 Arrive at Hotel Metropolitan Sendai

Scientific Program

- Oral Presentations -

Tuesday, Sep. 6

Session 1		Basic / Theory I	
		Chairman : Kari Martti Ullakko	
Time		Titles and Authors	
9:10 	Invited O1	Structure and Magnetism of Magnetic Shape Memory Alloys from Neutron and Synchrotron Studies	
9:35		<u>V. A. Chernenko</u> , J. M. Barandiarán, P. Lázpita, J. Gutiérrez and A. Kimura	
9:35 	O2	Quandary over Structure of Ni-Mn-Ga Modulated Martensite Exhibiting MIR	
9:50		<u>O. Heczko</u> , J. Drahokoupil, P. Cejpek and V. Holý	
9:50 	O3	First-Principle Study of Shear-Induced Transformations in Ni₂MnGa Alloy	
10:05		<u>M. Zelený</u> , A. Sozinov, L. Straka and O. Heczko	
10:05 	O4	Intermartensitic Phase Boundaries in Ni-Mn-Ga Alloys: A Viewpoint from Ab initio Thermodynamics	
10:20		<u>B. Dutta</u> , T. Hickel and J. Neugebauer	
10:20 	O5	First Principles Study of Disorder Effect in Co (Cu) Doped Ni-Mn-In Heusler Alloy	
10:35		<u>P. Borgohain</u> and M. B. Sahariah	
Session 2		Basic / Theory II	
		Chairman : Volodymyr Chernenko	
Time		Titles and Authors	
11:05 	Invited O6	Insights into Magneto-Structural-Configurational Couplings in Ferromagnetic Shape Memory Alloys from Electronic Structure Calculations	
11:30		<u>R. Arroyave</u> , N. Singh, A. Talapatra, T. Duong, I. Karaman and P. Entel	
11:30 	O7	Reference States of Cr-doped Ni-Co-Mn-(In, Sn) Heusler Alloys: Insights from First Principles Study	
11:45		<u>V. D. Buchelnikov</u> , V. Sokolovskiy, M. Zagrebin and P. Entel	
11:45 	O8	First-Principles Study on the Magnetostructural Phase Transitions of Co-based Heusler Alloys	
12:00		<u>M. Tsujikawa</u> , S. Kano and M. Shirai	
12:00 	O9	On Scaling Phenomena and Applicability of Seeger Model to Plasticity of Martensites	
12:15		<u>S. Kustov</u> , I. Liubimova, E. Cesari, V. Nikolaev and Y. I. Chumliakov	
12:15 	O10	(Ni,Pt)₂CrGa: Anti-Ferromagnetic Shape Memory Alloys?	
12:30		<u>T. Roy</u> and A. Chakrabarti	

Session		Caloric	
3		Chairman : Chengbao Jiang	
Time	Titles and Authors		
14:00 	Invited O11	Interplay of Magnetism and Microstructure in Magnetocaloric Materials: A First-Principles Perspective	
14:25		<u>M. E. Gruner</u> , P. Entel and S. Fähler	
14:25 	O12	Simulation of Complex Magnetic Intermetallics for Ferroic Cooling	
14:40		<u>P. Entel</u> , N. Singh, R. Arroyave, A. Talapatra, M. E. Gruner, V. D. Buchelnikov, V. V. Sokolovskiy, M. Acet and L. Sandratskii	
14:40 	O13	Magnetostructural Coupling and Magnetocaloric Effect in Ni-Mn-Ga-Cu Microwires	
14:55		<u>X. Zhang</u> , M. Qian, Z. Zhang, L. Wei, L. Geng and J. Sun	
14:55 	O14	Elastocaloric Effect in Ni-Co-Mn-In and Ni-Mn-Sn Metamagnetic Shape Memory Alloys	
15:10		<u>J. Liu</u> , W. Sun, B. Lu and Y. Li	
15:10 	O15	Martensitic Transition in Ni-Mn-In Crystals under Simultaneous Application of Magnetic Field and Uniaxial Pressure	
15:25		<u>P. Laureline</u> , P. Courtois and D. Bourgault	
15:25 	O16	The Elastocaloric Effect in the Shape Memory Alloys Exhibiting Weak and Typical First-Order Martensitic Transformations	
15:40		<u>F. Xiao</u> , X. Jin, T. Fukuda, T. Kakeshita and J. Liu	

Wednesday, Sep. 7

Session 4		Basic / Theory III	
		Chairman : Pratip Kumar Mukhopadhyay	
Time		Titles and Authors	
9:00 9:25	Invited O17	Lattice Instability of Ferromagnetic Shape Memory Alloys Revealed by Photoelectron Spectroscopy <u>A. Kimura</u>	
9:25 9:40	O18	Evidence of Change of the Density of States During Transformation in Ni-Mn-X (X = In, Sn and Sb) Alloys <u>R. Y. Umetsu</u> , X. Xu, W. Ito, T. Kanomata and R. Kainuma	
9:40 9:55	O19	Ordering Tendencies and Electronic Properties in Full-Heusler NiCoMnAl and NiCoMnGa Alloys <u>P. B. Neibecker</u> , M. Gruner, O. Dolotko, X. Xu, R. Y. Umetsu, R. Kainuma, W. Petry and M. Leitner	
9:55 10:10	O20	Transitions of Magnetic Domain Structure Mediated by Anti-Phase Boundaries in Ni₅₀Mn₂₀In₃₀ Heusler Alloy <u>K. Niitsu</u> , T. Tanigaki, X. Xu, Y. Murakami, D. Shindo and R. Kainuma	
10:10 10:25	O21	On the Mechanism of Martensitic Transformation in a Ni-Mn-Ga Single Crystal <u>M. J. Szczerba</u> and R. Chulist	
10:25 10:40	O22	Asymmetric Distribution of Martensitic Variants in NiMnGa Shape Memory Alloys <u>R. Chulist</u> , M. J. Szczerba and M. Faryna	
Session 5		Properties I	
		Chairman : Oleg Heczko	
Time		Titles and Authors	
11:10 11:35	Invited O23	Effects of Atomic Ordering on the Characteristics and Properties of Co-doped Ni-Mn-Ga Metamagnetic Shape Memory Alloys <u>C. Segui</u> and E. Cesari	
11:35 11:50	O24	Tailoring the Magnetostructural Transitions: from NiMnGa to Ni(CuCo)MnGa Alloys <u>J. Wang</u> , C. Jiang, H. Hua, P. Li and H. Xu	
11:50 12:05	O25	Atomic Ordering and Magnetic Properties of Directionally Solidified Ni-Co-Mn-Sn-In Metamagnetic Heusler Alloy <u>P. Czaja</u> , J. Morgiel, T. Czeppe, M. Kowalczyk, M. Szlezynger and W. Maziarz	
12:05 12:20	O26	Effect of Fe Substitution for Ni on Microstructure Evolution and Magnetic Properties of Ni-Mn-Sn Heusler Alloy <u>H. Zhang</u> , X. Zhang, M. Qian, D. Xing, L. Geng and J. Sun	
12:20 12:35	O27	Microstructure and Martensitic Transformation in Vacuum Hot Pressed Ni-Mn-Sn-In Heusler Powders <u>W. Maziarz</u> , A Wójcik, M. Szczerba, J. Dutkiewicz, P. Czaja, J. Karwan-Baczewska and E. Cesari	

Session 6		Properties II		Chairman : Peter Entel
Time		Titles and Authors		
14:00 14:25	Invited O28	Strain Glass as Potential Smart Materials <u>X. Ren</u> , Y. Wang, Y. Zhou, J. Zhang, D. Wang, Y. Wang, K. Otsuka and Y. Ji		
14:25 14:50	Invited O29	Multi-Ferroic Transitions in Magnetic Shape Memory Alloys N. M. Bruno, D. Salas, S.J. Wang, Y.I. Chumlyakov and <u>I. Karaman</u>		
14:50 15:05	O30	Martensite-Austenite Phase Transformations in Magnetic Shape Memory Actuators M. Müller, T. Schiepp, <u>L. Riccardi</u> , E. Pagounis and M. Laufenberg		
15:05 15:20	O31	Optimizing Multifunctional Properties of Heusler-type Magnetic Shape Memory Alloys by Tuning Magnetostructural Transformation Parameters <u>D. Cong</u> , L. Huang, X. Sun, Y. Qu and Y. Wang		
15:20 15:35	O32	Influence of the Boron Addition on the Structure and Properties of the $\text{Ni}_{45.5}\text{Co}_{4.5}\text{Mn}_{36.6}\text{In}_{13.4}$ Alloy <u>K. Prusik</u> , E. Matyja, M. Zubko, A. Chrobak and M. Kubisztal		
15:35 15:50	O33	Investigation on the Texture of $\text{Ni}_{45}\text{Mn}_{36.6}\text{In}_{13.4}\text{Co}_5$ ribbon <u>Y. Feng</u> , H. Chen and X. Bian		
Session 7		Magnetomechanics / Twin Boundary I		Chairman : Oleksii Sozinov
Time		Titles and Authors		
16:20 16:45	Invited O34	Vibrational Behavior of Highly Mobile Interfaces in 10 M Ni-Mn-Ga <u>H. Seiner</u> , P. Sedláč, L. Straka, O. Heczko and M. Landa		
16:45 17:00	O35	Type II Twin Boundary in Ni-Mn-Ga-Co-Cu Non-Modulated Martensite with Low Twinning Stress <u>Y. Ge</u> , F. Nilsén, A. Sozinov, K. Ullakko and S. -P. Hannula		
17:00 17:15	O36	Fe-Doped Ni-Mn-Ga 10M Martensite Free of {110} Twin Lamination <u>L. Straka</u> , J. Drahokoupil and O. Heczko		
17:15 17:30	O37	Direct Observation of Fast-Moving Twin Boundaries in Magnetic Shape Memory Alloy Ni-Mn-Ga 5M Martensite <u>A. Saren</u> , T. Nicholls, J. Tellinen, D. Musiienko and K. Ullakko		
17:30 17:45	O38	Shape Memory and Superelastic Effect at the Nanoscale <u>I. R. Aseguinolaza</u> , V. A. Chernenko, E. Modin, E. Pustovalov, A. Chuvilin and J. M. Barandiaran		

Thursday, Sep. 8

Session 8		Magnetomechanics / Twin Boundary II		Chairman : Sebastian Fähler
Time		Titles and Authors		
9:00 9:25	Invited O39	Non-Uniform Magnetostress and Fatigue of Magnetic Shape Memory Alloys <u>P. Mullner</u>		
9:25 9:40	O40	Twin Boundaries Formation in Ni-Mn-Ga 10M Martensite by a Localized Pulsed Magnetic Field <u>A. Sozinov</u> , A. Saren and K. Ullakko		
9:40 9:55	O41	Kinetic of Twin Boundaries in Ni-Mn-Ga: from Energy Barriers to Actuation Performance E. Faran, N. Zreihan, I. Benichou, S. Givli and <u>D. Shilo</u>		
Session 9		Novel Alloys		Chairman : Ibrahim Karaman
Time		Titles and Authors		
10:25 10:50	Invited O42	New Families of Shape Memory Ferromagnets: Hexagonal MM'X Compounds and All-d-Metal Heusler alloys <u>E. Liu</u> and G. Wu		
10:50 11:05	O43	TEM Studies of Microstructures in Mn_{55.2}Ga_{19.0}Cu_{25.8} Alloy R. Sawada, K. Minakuchi, K. Niitsu, M. Nagasako, Y. Hayasaka, T. Yamamoto, R. Kainuma and <u>Y. Murakami</u>		
11:05 11:20	O44	Effect of Composition on Elastic Moduli for a CoNiAl System <u>B. R. Kanth</u> , S. Hossain and P. K. Mukhopadhyay		
11:20 11:35	O45	Thermomechanical Processing and Functional Fatigue of Oligocrystalline Fe-Mn-Al-Ni <u>M. Vollmer</u> , P. Krooß, M. Kriegel, H. Biermann and T. Niendorf		
11:35 11:50	O46	Neutron Diffraction Study on Elastic Deformation of an Iron-Palladium Ferromagnetic Shape Memory Alloy <u>T. Fukuda</u> , T. Yamaguchi, T. Kakeshita, S. Harjo and T. Kawasaki		

Friday, Sep. 9

Session 10		Film		Chairman : Peter Mullner
Time		Titles and Authors		
9:00 9:25	Invited O47	Nucleation of Martensite in Epitaxial Heusler Films <u>R. Niemann</u> , A. Diestel, B. Schleicher, A. Backen, H. Seiner, O. Heczko, S. Hahn, M. F. -X. Wagner, L. Schultz, K. Nielsch and S. Fähler		
9:25 9:50	Invited O48	Magnetic Shape Memory Films for Thermal Energy Harvesting <u>M. Kohl</u> , M. Gültig, H. Miki, M. Ohtsuka, T. Takagi and H. Ossmer		
9:50 10:05	O49	Development of Ni-Mn-In Type Magnetic Shape Memory Alloy Thin Plate for Magnetically-Actuated Devices <u>H. Miki</u> , K. Tsuchiya, E. Abe, M. Ohtsuka, M. Gueltig, M. Kohl and T. Takagi		
10:05 10:20	O50	Towards Multicaloric Effects in Epitaxial Heusler Films on Ferroelectric Substrates B. Schleicher, R. Niemann, S. Schwabe, A. Diestel, A. Waske, R. Hühne, P. Walter, L. Schultz, K. Nielsch and <u>S. Fähler</u>		
Session 11		Composites / Processing		Chairman : Manfred Kohl
Time		Titles and Authors		
10:50 11:05	O51	Is it Possible to Make Single Crystalline Ni-Mn-Ga Devices by 3D Printing? <u>K. Ullakko</u> , A. Sozinov and J. Järvinen		
11:05 11:20	O52	Electric Field Manipulation of Magnetic Properties in Ni-Mn Based Ferromagnetic Shape Memory Alloys/Piezoelectrics Composites <u>D. Wang</u>		
11:20 11:35	O53	Investigation for NiMnGa Particles/Mg Composite <u>B. Tian</u> , F. Chen, Y. Tong, L. Li and Y. Zheng		
11:35 11:50	O54	Evaluation of Three-Dimensional Microscopic Deformation of NiMnGa Particles in Silicone Composite <u>P. Sratong-on</u> , H. Kawabe, M. Tahara, T. Inamura, V. Chernenko and H. Hosoda		

Scientific Program

- Poster Presentations -

Poster No.	Titles and Authors
P1	Monte Carlo Simulations of Magnetization Curves of Ni-(Co)-Mn-In Heusler Alloys in High Magnetic Fields <u>V. Sokolovskiy</u> , V. Buchelnikov, M. Zagrebin and P. Entel
P2	Ab Initio Investigations of Structural and Magnetic Properties of Ni-Pt-Mn-Z (Z = Ga, In, Sn) Heusler Alloys M. A. Zagrebin, V. V. Sokolovskiy and <u>V. D. Buchelnikov</u>
P3	Electronic and Magnetic Properties of $\text{Mn}_{48.1}\text{Ni}_{40.2}\text{Fe}_{2.5}\text{Sn}_{9.2}$ Heusler Alloy Studied by Hard X-Ray Photoelectron Spectroscopy and X-Ray Magnetic Circular Dichroism <u>J. Chen</u> , S. Zhu, K. Sumida, M. Ye, N. Munisa, S. Ueda, Y. Takeda, Y. Saitoh, V. Chernenko, J. M. Barandiarán and A. Kimura
P4	Dynamical Stability of Shape Memory Alloys from First- Principles <u>Y. Ikeda</u> , A. C. Conill, A. Togo and I. Tanaka
P5	Photoemission Study of Structural Phase Transition of Heusler Alloy $\text{Pd}_2\text{Mn}_{1.4}\text{In}_{0.6}$ <u>S. Imada</u> , T. Shinoda, T. Kadono, A. Sekiyama, A. Higashiya, A. Yamasaki, H. Fujiwara, K. Tamasaku, M. Yabashi, T. Ishikawa, H. Okada and T. Kanomata
P6	Some Features of Martensitic Transformation Entropy Change in Metamagnetic Shape Memory Alloys <u>E. Cesari</u> , J. Torrens-Serra, C. Seguí, S. Kustov, V. Recarte, J. I. Pérez-Landazábal and V. A. L'vov
P7	Experimental Study Under Mechanics-Thermal-Magnetic Coupling of Ferromagnetic Shape Memory Alloy Grown by Directional Solidification Y. Zhu, T. Chen, Y. Teng and <u>H. Liu</u>
P8	Influence of Si Addition on Microstructure, Martensitic Transformation and Inverse Magnetocaloric Effect in Ni-Co-Mn-Sn Metamagnetic Shape Memory Alloys <u>A. Wójcik</u> , M. Szczerba, M. Kowalczyk, P. Włodarczyk, E. Cesari and W. Maziarz
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