

# **8th Joint European Magnetic Symposia (JEMS 2016)**

Journal of Physics: Conference Series Volume 903

Glasgow, United Kingdom  
21 – 26 August 2016

ISBN: 978-1-5108-5062-0  
ISSN: 1742-6588

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2016) by the Institute of Physics  
All rights reserved. The material featured in this book is subject to  
IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact the Institute of Physics  
at the address below.

Institute of Physics  
Dirac House, Temple Back  
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481  
Fax: 44 1 17 920 0979

[techtracking@iop.org](mailto:techtracking@iop.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# Table of contents

## Volume 903

**8th Joint European Magnetic Symposia (JEMS2016)**  
**21–26 August 2016, Glasgow, UK**

**Accepted papers received: 27 September 2017**  
**Published online: 28 October 2017**

### Preface

011001  
OPEN ACCESS  
[8th Joint European Magnetic Symposia \(JEMS 2016\)](#)

011002  
OPEN ACCESS  
[Peer review statement](#)

### Biomagnetism and medical applications

012001  
OPEN ACCESS  
[Ferromagnetic resonance in the ethmoid bones of salmon and silver carp](#)

Svitlana Gorobets, Oksana Gorobets, Volodymyr Golub and Marina Gromnadska.....1

012002  
OPEN ACCESS  
[The prediction of biogenic magnetic nanoparticles biomineratization in human tissues and organs](#)

O Medviediev, O Yu Gorobets, S V Gorobets and V S Yadrykhins'ky.....4

## **Electronic correlations, superconductivity, superconducting spintronics**

012003

OPEN ACCESS

[Hedgehog-like Spin Fluctuation and the Boson Peak in Zn-Mg-Tb Quasicrystals](#)

Y. Sekiyama, R. Maeda and I. Kanazawa.....7

## **Frustrated and disordered magnetism including spin ice**

012004

OPEN ACCESS

[Methods of dilatometric investigations under extreme conditions and the case of spin-ice compounds](#)

M Doerr, S Granovsky, M Rotter, T Stöter, Z-S Wang, S Zherlitsyn and J Wosnitza.....10

012005

OPEN ACCESS

[Spin Anisotropy in Cu\(tn\)Cl<sub>2</sub>: A Quasi-Two-Dimensional  \$S = 1/2\$  Spatially Anisotropic Triangular-Lattice Antiferromagnet](#)

R Tarasenko, A Orendáčová, E Čižmár, M Orendáč, I Potočnák, S Zvyagin and A Feher.....14

012006

OPEN ACCESS

[Energy surface and transition rates in a hexagonal element of spin ice](#)

S Y Liashko, V M Uzdin and H Jónsson.....17

## **Magnetic memories and magnetic recording, sensors**

012007

OPEN ACCESS

[CoFe-microwires with stress-dependent magnetostriction as embedded sensing elements](#)

M.M. Salem, M.G. Nematov, A. Uddin, L.V. Panina, M.N. Churyukanova and A. T. Marchenko.....20

012008

OPEN ACCESS

[Noise study of magnetic field sensors based on magnetic tunnel junctions](#)

M. Mouchel, A. Bocheux, C. Ducruet, Ph. Sabon, I.-L. Prejbeanu, Y. Conraux, J. Alvarez-Hérault, K. Mackay and C. Baraduc.....24

012009

OPEN ACCESS

[Switching Field and Resolution of MFM Tips Prepared by Coating Fe/Co<sub>50</sub>Pt<sub>50</sub> Magnetic Films](#)

Yuma Tomita, Masaaki Futamoto, Mitsuru Ohtake, Fumiyoishi Kirino and Nobuyuki Inaba.....28

012010

OPEN ACCESS

[Magnetostrictive Materials for aerospace applications](#)

A. Al-Taher, R.W. Reiss, A.D. Lafferty, S.A. Hayes, N. Lupu, I. Murgulescu and N.A. Morley.....31

## **Magnetic shape memory, magnetoelastic and multifunctional materials**

012011

OPEN ACCESS

[Tunable microwave electric polarization in magnetostrictive microwires](#)

L.V. Panina, D. P. Makhnovskiy, A. Dzhumazoda, S.V. Podgornaya, V. G. Kostishyn and H.X. Peng.....35

012012

OPEN ACCESS

[Study of magnetic field distribution in anisotropic single twin-boundary magnetic shape memory \(MSM\) element in actuators](#)

N Gabdullin and S H Khan.....39

012013

OPEN ACCESS

[Change of magnetic domain structure by mechanically induced twin boundary motion in Ni-Mn-Ga single crystal](#)

Vít Kopecký and Oleg Heczko.....42

## **Magnetic thin films, surface, interfaces and patterned thin films**

012014

OPEN ACCESS

[Magnetic and dielectric properties of o-LuFeO<sub>3</sub>/SrTiO<sub>3</sub>](#)

D V Mamedov, T P Gavrilova, I V Yatsyk, I F Gilmutdinov, Z Y Seidov, M A Aljanov, M J Najafzade, I N Ibrahimov, V I Chichkov, N V Andreev, E Yu Koroleva and R M Eremina.....46

012015

OPEN ACCESS

[Anisotropic magnetic property of nanocomposite Nd<sub>2</sub>Fe<sub>14</sub>B/Mo/α-Fe multilayer films](#)

K Kobayashi, D Ogawa, K Koike, H Kato, M Oogane, T Miyazaki, Y Ando and M Itakura.....51

012016

OPEN ACCESS

[First principles and metadynamics study of the spin-reorientation transition in Fe/Au\(001\) films](#)

B. Nagyfalusi, L. Udvardi and L. Szunyogh.....54

012017

OPEN ACCESS

[Charge transfer and magnetization of a MoS<sub>2</sub> monolayer at the Co\(0001\)/MoS<sub>2</sub> interface](#)

T. Garandel, R. Arras, X. Marie, P. Renucci and L. Calmels.....57

012018

OPEN ACCESS

[Magnetic properties of multilayers based on anisotropic Heisenberg films with dipolar long-range interaction](#)

P V Prudnikov, V V Prudnikov, A P Soldusova and A N Purtov.....60

012019

OPEN ACCESS

[Dependence of magnetic anisotropy on MgO sputtering pressure in Co<sub>20</sub>Fe<sub>60</sub>B<sub>20</sub>/MgO stacks](#)

A Kaidatzis, C Serletis and D Niarchos.....63

012020

OPEN ACCESS

[Modification of magnetization orientation in Pt/Co/Pt ultrathin films by femtosecond laser pulses](#)

J. Kisielewski, Z. Kurant, I. Sveklo, M. Tekielak, E. Dynowska, M. Jakubowski, A. Wawro and A. Maziewski.....66

012021

OPEN ACCESS

[Thickness and angular dependent magnetic anisotropy of La<sub>0.67</sub>Sr<sub>0.33</sub>MnO<sub>3</sub> thin films by Vectorial Magneto Optical Kerr Magnetometry](#)

S K Chaluvadi, P Perna, F Ajejas, J Camarero, A Pautrat, S Flament and L Méchin.....69

012022

OPEN ACCESS

[Preparation of high-quality planar FeRh thin films for \*in situ\* TEM investigations](#)

Trevor P. Almeida, Damien McGrouther, Yevheniy Pivak, Hector Hugo Perez Garza, Rowan Temple, Jamie Massey, Christopher H. Marrows and Stephen McVitie.....72

012023

OPEN ACCESS

[Magnetic and structural properties of RTA-processed L1<sub>0</sub> FePt-Mn thin films](#)

N. Y. Safonova, M. Riepp, O. Klein and M. Albrecht.....76

012024

OPEN ACCESS

[Evolution of the structural and electronic properties of thin Bi films on Ge\(111\)](#)

C Zucchetti, F Bottegoni, A Calloni, G Bussetti, L Duò, M Finazzi and F Ciccacci.....79

## **Magnetism and spin transport in graphene/h-BN, carbon based and organic materials**

012025

OPEN ACCESS

[Magneto-optical reflection spectroscopy on graphene/Co in the soft x-ray range](#)

H.-Ch. Mertins, C. Jansing, M. Gilbert, M. Krivenkov, J. Sanchez-Barriga, A. Varykhlov, O. Rader, H. Wahab, H. Timmers, A. Gaupp, M. Tesch, A. Sokolov, D. Legut and P M. Oppeneer.....83

012026

OPEN ACCESS

[Magnetization measurement of a solid CO<sub>2</sub> grain based on its field-induced translation under microgravity conditions](#)

Wakana Yamaguchi, Keiji Hisayoshi and Chiaki Uyeda.....87

012027

OPEN ACCESS

[Ab-Initio Calculation of the Magnetic Properties of Metal-Doped Boron-Nitrogen Nanoribbon](#)

J. Rufinus.....91

## **Magnetism in alloys and intermetallics**

012028

OPEN ACCESS

[Spin density wave behaviour in the \(Cr<sub>98.4</sub>Al<sub>1.6</sub>\)<sub>100-y</sub>Mo<sub>y</sub> and \(Cr<sub>100-x</sub>Al<sub>x</sub>\)<sub>95</sub>Mo<sub>5</sub> alloy series](#)

B Muchono, ARE Prinsloo, CJ Sheppard, AM Venter and KD Liss.....95

012029

OPEN ACCESS

[Bulk and local properties of intermetallic GdAgSn compound](#)

K Łątka and A W Pacyna.....98

012030

OPEN ACCESS

[An ab initio study of the effects of vacancies on the static and dynamic magnetic properties of Co<sub>2</sub>MnSi](#)

B. Pradines, R. Arras and L. Calmels.....102

012031

OPEN ACCESS

[Uniaxial pressure effect on magnetization process of ferromagnetic domains in a tensile deformed Pt<sub>3</sub>Fe antiferromagnet](#)

Satoru Kobayashi and Yasunori Konno.....106

012032

OPEN ACCESS

[Synthesis and magnetic properties of the thin film exchange spring system of MnBi/FeCo](#)

S. Sabet, E. Hildebrandt and L. Alff.....109

012033

OPEN ACCESS

[Structure and magnetic properties of Sm<sub>1-x</sub>Zr<sub>x</sub>Fe<sub>10</sub>Si<sub>2</sub> \(x=0.2-0.6\) alloys](#)

M. Gjoka, C. Sarafidis, V. Pscharis, E. Devlin, D. Niarchos and G. Hadjipanayis.....113

012034

OPEN ACCESS

[Defects and magnetic structure of CuMnSb](#)

František Máca, Josef Kudrnovský, Václav Drchal and Ilja Turek.....116

012035

OPEN ACCESS

[Study and characterization of soft magnetic materials for beam intensity monitors at CERN](#)

S Aguilera, H Hofmann and P Odier.....119

## **Magneto-transport, spin electronics, topological insulators**

012036

OPEN ACCESS

[Circularly polarized light interaction in topological insulators investigated by time-resolved ARPES](#)

D Bugini, H Hedayat, F Boschini, H Yi, C Chen, X Zhou, C Manzoni, C Dallera, G Cerullo and E Carpene.....123

012037

OPEN ACCESS

[Magnetotransport properties of nanogranular Bi and Co\(c=0.2\)Bi\(1-c\) thin films](#)

P Athanasopoulos, Th Speliotis and C Christides.....127

012038

OPEN ACCESS

[Three-dimensional Dirac semimetal and magnetic quantum oscillations in Cd<sub>3</sub>As<sub>2</sub>](#)

Filip Orbanić, Mario Novak, Nikola Biliškov, Sanda Pleslić and Ivan Kokanović.....130

## **Materials for energy (permanent magnets, magnetocalorics, soft magnetic materials, Heusler alloys)**

012039

OPEN ACCESS

[A semi-empirical approximation of static hysteresis for high flux densities in highly grain-oriented silicon iron](#)

C Carrander and G Engdahl.....133

012040

OPEN ACCESS

[Development of High-Speed Switched Reluctance Motor for Electric Power Tools](#)

Kenji Nakamura, Yuya Kumasaka and Osamu Ichinokura.....136

012041

OPEN ACCESS

[Synthesis of magnetocaloric LaFe<sub>11.6</sub>Si<sub>1.4</sub> alloy by spark plasma sintering](#)

P. Shamba, G. Kerridge, N.A. Morley, I. M. Reaney and W. M. Rainforth.....139

012042

OPEN ACCESS

[Thermal stability of Sm<sub>2</sub>Fe<sub>17</sub>N<sub>3</sub> magnet powders](#)

N Imaoka, K Takagi, K Ozaki, T Iriyama and H Kato.....143

012043

OPEN ACCESS

[First-order antiferromagnetic to ferromagnetic transition in Mn\(Co,Fe\)P probed by x-ray absorption experiments](#)

F. Guillou, A. Hen, F. Wilhelm and A. Rogalev.....147

012044

OPEN ACCESS

[Influence of La substitutions on the magnetic after-effect in hexaferrites and garnets](#)

P Hernández-Gómez, X Liu, J M Muñoz, C Torres and O Alejos.....151

012045

OPEN ACCESS

[Ni-Mn-Sn Heusler: milling and annealing effect on structural and magnetic properties](#)

Florin Popa, Traian Florin Marinca, Horea Florin Chicinaş, Olivier Isnard and Ionel Chicinaş.....154

012046

OPEN ACCESS

[Kinetics of heat flux avalanches at the first order transition in  \$\text{La}\(\text{Fe}-\text{Mn}-\text{Si}\)\_{13}\text{-H}\_{1.65}\$  compounds](#)

M Piazzì, C Bennati and V Basso.....157

012047

OPEN ACCESS

[Magnetic Circuit Model combined with Play Model Obtained from Landau-Lifshitz-Gilbert Equation](#)

H Tanaka, K Nakamura and O Ichinokura.....162

012048

OPEN ACCESS

[Accuracy Improvement of Magnetic Hysteresis Calculated by LLG Equation](#)

H Tanaka, K Nakamura and O Ichinokura.....165

012049

OPEN ACCESS

[Effect of long-term thermal aging on magnetic hysteresis for low-alloy pressure vessel steel](#)

Satoru Kobayashi, Ferenc Gillemot, Ákos Horváth, Marta Horváth and Almásy László.....168

012050

OPEN ACCESS

[Tailoring the ultra-soft magnetic properties of sputtered FineMET thin films for high-frequency power applications](#)

Ansar Masood, Paul McCloskey, Cian Ó Mathúna and Santosh Kulkarni.....171

012051

OPEN ACCESS

[Influence of operating frequency on design of power electronic transformers](#)

V C Valchev, A Van den Bossche and T P Todorova.....174

## **Micromagnetics, magnetization processes**

012052

OPEN ACCESS

[Micromagnetic simulation of nanomagnets with geometry-tuned domain wall nucleation](#)

W. Kaiser, M. Kiechle, G. Žiemys, D. Schmitt-Landsiedel and S. Breitkreutz-v. Gamm.....177

012053

OPEN ACCESS

[Angular dependence of the domain wall depinning field in sensors with segmented corners.](#)

D. Heinze, B. Borie, H. Grimm, J. Wahrhusen and M. Kläui.....180

012054

OPEN ACCESS

[Magnetization of a Single Carbonaceous Grain Obtained by Field-Induced Acceleration](#)

Keiji Hisayoshi and Chiaki Uyeda.....186

012055

OPEN ACCESS

[Probing domain walls in cylindrical magnetic nanowires with electron holography](#)

M Staňo, S Jamet, J C Toussaint, S Bochmann, J Bachmann, A Masseboeuf, C Gatel and O Fruchart.....191

012056

OPEN ACCESS

[New calculations of Gilbert damping in ferromagnetic transition metals](#)

A. Umerski and D. M. Edwards.....194

## **Nanoparticles and interfaces , nanomaterials and molecular magnetism**

012057

OPEN ACCESS

[Liquid-liquid phase separation and cluster formation at deposition of metals under inhomogeneous magnetic field](#)

O Yu Gorobets, Yu I Gorobets, V P Rospotniuk, V I Grebinaha and A A Kyba.....197

## **Optically driven spin excitations, magneto-optics and magnetoplasmonics**

012058

OPEN ACCESS

[Terahertz excited plasmon-magnon interaction and magnetoplasmon-enhanced energy transfer within the framework of generalized spin Hamiltonian](#)

Vyacheslav S. Gritzaenko, Dmitry I. Bazhanov and Oleg V. Farberovich.....201

012059

OPEN ACCESS

[Magnetic response of surface plasmon polaritons in silver / Co<sub>2</sub>FeSi<sub>0.6</sub>Al<sub>0.4</sub> Heusler alloy / silver films](#)

Yoshito Ashizawa, Yuya Fukumoto and Katsuji Nakagawa.....207

012060

OPEN ACCESS

[Development of in situ magneto-ellipsometry for studying correlation between the optical and magneto-optical properties of ferromagnetic thin films](#)

O A Maximova, N N Kosyrev, S N Varnakov, S A Lyashchenko, I ATarasov, I AYakovlev, O M Maximova, D V Shevtsov and S G Ovchinnikov.....210

## **Perovskites, Multiferroics, artificial/composite multiferroics**

012061

OPEN ACCESS

[Influence of Mn diffusion on IrMn thickness threshold for the onset of exchange bias in IrMn/Co bilayers](#)

G Vinai, L Frangou, C Castan-Guerrero, V Bonanni, B Gobaut, S Auffret, I L Prejbeanu, B Dieny, V Baltz and P Torelli.....213

## **Spin orbitronics, spintronics in antiferromagnets and skyrmions**

012062

OPEN ACCESS

[On Berezinskii-Kosterlitz-Thouless transition in monoaxial chiral helimagnets](#)

Igor Proskurin, Alexander S Ovchinnikov and Jun-ichiro Kishine.....217

## **Spin waves, magnonics and dynamics**

012063

OPEN ACCESS

[Correlation between Gilbert damping and electric resistivity in Fe<sub>94</sub>Co<sub>6</sub>/GaAs single crystal thin films: A role of electron scattering](#)

Akihiro Iwasaki, Takahiko Suzuki, Nobuyuki Inaba, Yutaka Takahashi, Fumiyoji Kirino, Mitsuru Otake and Masaaki Futamoto.....225