Magnetism 2014

7–8 April 2014
The University of Manchester, UK

http://magnetism2014.iopconfs.org
www.magnetism2014.org

Organised by the IOP Magnetism Group
Co-sponsored by IEEE UK & RoI Magnetics Chapter

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- raise aspirations by popularising physics
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Magnetism 2014

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General Organisation
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Disclaimer
The Institute of Physics, the University of Manchester and their approved representatives cannot take responsibility for any accident, loss or damage to participants or to their property during the conference.
The organisers would like to thank the following exhibitors and sponsors for their contribution to making this conference a success:

Sponsors

IEEE MAGNETICS

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Exhibitors

CRYOGENIC
CRYOGENIC LIMITED

Durham Magneto Optics Ltd

Journal of Physics D
Applied Physics
Magnetism 2014

Location
Renold Building
The University of Manchester
Sackville Street
Manchester M1 7JR
http://www.conference.manchester.ac.uk/our-venues/72-renold-building

Accommodation
Accommodation is not included in your registration and you are expected to make your own arrangements. There are several hotels nearby, for further information please visit http://magnetism2014.iopconfs.org/211125.

Registration
Registration will take place in the foyer of the Renold building during the following hours:

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
</tr>
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<tbody>
<tr>
<td>Monday 7 April</td>
<td>09:00-19:00</td>
</tr>
<tr>
<td>Tuesday 8 April</td>
<td>08:30-17:30</td>
</tr>
</tbody>
</table>

Please note that during lunch times the registration desk may be unmanned for a short period of time. On arrival, each participant will receive a delegate pack containing a pen, pad, a programme and a badge. Please note that the abstract book is electronic only. Please wear your badge at all times because this will help with security and enable you to identify your fellow participants. Replacement badges can be issued at the registration desk. On your departure, please return your badge to the registration desk so they can be recycled.

The conference abstract book will be made available to delegates as a PDF file, in advance of the conference. The abstract book will only be available electronically to keep in line with reducing our carbon footprint. Please print a personal copy if you would like to refer to a hardcopy at the conference.

Messages
A message board will be placed near the registration desk. Participants should check the board for messages as an attempt to locate participants will only be made in the case of an emergency. During registration times, messages can be left by emailing conferences@iop.org. Messages can also be left by telephone on +44 (0) 7850 311 912.

Catering
Tea, coffee and lunch is included in your registration fee. These will be served in the exhibition and poster area at set times during the conference programme.

Monday 7 April
Registration refreshments 09:00–10:00
Lunch 12:45–14:00
Poster session refreshments 16:30–18:00
Reception & conference dinner 19:30–22:30

Tuesday 8 April
Morning break 10:00–10:30
Lunch 13:15–14:15
Afternoon break 15:30–16:00
Dietary requirements
Participants with special dietary requirements are asked to notify lisa.cornwell@iop.org by e-mail prior to their arrival if they have not already done so when registering. Those with special dietary requirements other than vegetarian are asked to make themselves known to the catering team. It will not be possible to provide an alternative menu unless prior notification has been received.

Social programme

Monday 7 April
Reception & conference dinner 19:30–22:30
There will be a drinks reception and conference dinner taking place at the Palace Hotel, Manchester. This is included in the registration fee and all are welcome to attend. Delegates will be required to make their own way to the hotel. Below is the address and instructions on how to get there.

Address:
The Palace Hotel
Oxford Street,
Manchester,
M60 7HA
+44 (0) 1612 881 111
http://www.palacehotelmanchestercity.co.uk/

How to get there:
1. From the Renold building (where the conference is taking place) head West on Altrincham Street toward Sackville Street.
2. Turn right onto Charles Street then turn right onto Oxford Road. The Palace Hotel will be on the right hand side.
Travel to the conference
Manchester is well connected by all modes of transport so is easy to reach whether you are travelling by road, rail or air.

By air
Manchester International Airport is located just 10 miles from the city centre with a direct train service into Piccadilly station every 20 minutes throughout the week.

The approximate cost is £5 for a single train journey and the journey time is just 15 minutes. Alternatively you can get a taxi to the city centre which costs less than £20.

To get more detailed and comprehensive information about flying into Manchester, visit the Manchester Airport website, http://www.manchesterairport.co.uk/.

By rail
Most major cities across the UK offer direct train services into Manchester Piccadilly station, which is just 5 minutes’ walk from the Sackville Street campus.

The journey time from London to Manchester takes just over two hours. For details of prices and timetables of all national train connections into Manchester, visit http://www.networkrail.co.uk/.

First TransPennine Express operates direct train services into Manchester from across the north of England, Edinburgh and Glasgow and direct services into the city centre from Manchester Airport. For more information visit http://www.tpexpress.co.uk/.

For more information see National Rail Enquiries (tel: +44 (0)8457 484950), http://www.nationalrail.co.uk/.

By bus
Manchester is well served by a number of bus companies that operate around the city with buses running till the early hours.

The 147 shuttle bus runs between Piccadilly station and the Sackville Street and Oxford Road campuses every 10 minutes on weekdays. The cost is 80p per journey or £1.50 for a day pass.

The number 43 bus also operates all day to the airport and also throughout the night at regular intervals and travels along the Oxford Road/Wilmslow Road corridor.

For further information on routes around the city visit Greater Manchester Transport Executives at http://www.tfgm.com/journey_planning/Pages/default.aspx.

By coach
Manchester Coach Station is located in the centre of the City and is easily located from all of the UK’s major cities, including London and Birmingham. For further information, visit National Express at http://www.nationalexpress.com/wherewego/townsandcities/manchester.aspx.

By car
The M60 outer ring road connects to all the motorways running into Manchester from north, south, east and west.
The University of Manchester’s campuses are located from just 1 mile to the nearest motorway junction and there are University signposts directing you to the campuses. All campuses offer car parking on site although some are chargeable.

You can plan your route online using one of the free route planners - examples are http://www.theaa.com/route-planner/index.jsp or http://www.rac.co.uk/route-planner/.

Parking
The Sackville Street campus is close to the city centre and within a 5 minute walk of Piccadilly train station, so many delegates choose to arrive by public transport. However there is a 700 space car park located on Charles Street (post code M1 3BB) charging up to £8 per day weekdays and £2 per day at weekends.

Taxis
There is a taxi rank inside the Fairfield St entrance of Manchester Piccadilly.

There are also Hackney Carriages that can be flagged down on the street.

For safety advice see http://www.manchester.gov.uk/info/200094/taxis_and_private_hire/5142/taxi_passenger_advice.

Visas
Citizens of the European Union do not need a visa to enter Britain. If you are from any other country, find out about visa requirements before you travel by visiting http://ukvisas.gov.uk.

Internet access
Complimentary WiFi access is available in the Renold building. Information on how to log onto the network will be included within your welcome pack that you will receive on arrival.

Cloakroom
There are toilets throughout the Renold building.

Emergency evacuation procedures
All of the areas used by the conference are covered by the Universities fire alarm system. Occupants are expected to leave the building as quickly and safely as possible and make their way to a fire assembly point. The main assembly point is directly outside of the Renold Building; on Altrincham Terrace. All public meeting rooms have instructions concerning fire alarm activation and which assembly point to go to, and all participants should familiarise themselves with the safety instructions.

First aid
If you fall ill or injure yourself during the conference, please report the incident to the registration desk who will call a trained first aider. In case of serious injury, paramedics will be called.

Smoking
In accordance with government legislation smoking is not permitted in any building, temporary enclosed structure or substantially enclosed space outside of buildings.
General

Taxi numbers
Radio Cars - 0161 236 8033
Mantax - 0161 236 5133

Dress code
The dress code for the conference and the social events is smart casual.

Complaints
We hope that your time at the conference is enjoyable. However, should you encounter any problems during your stay, please report them to the conference registration desk as soon as possible. The conference team will make every effort to rectify the issue as soon as possible.

Conference information

Presenter’s information

The lecture theatres are equipped with the following audio-visual equipment:

- Computer/Laptop with PowerPoint facilities (Office XP and Windows XP)
- Data projector and projector screen
- Lectern microphone and lapel microphone

Speakers wishing to use additional audio-visual equipment or intending to present from a Macintosh computer are asked to contact Lisa Cornwell (lisa.cornwell@iop.org) before the conference.

Presentations
Speakers are requested to bring their presentations on a USB memory stick in either Office 2007 or .pdf format and preload them onto the laptop located in the lecture theatre. Speakers should save their presentation into the appropriate pre-named session folders pre-set on the desktop and files should be saved by speakers surname and initial.

To optimise compatibility, particularly for the inclusion of multimedia components, PowerPoint presentations should have been saved using PowerPoint’s “Package for CD” facility. Direct connection of personal laptops (with set up in the break prior to the corresponding session) is an acceptable but not preferred alternative.

The lecture theatre is reasonably large, and speakers should use a minimum 15-point font size in PowerPoint slides to ensure legibility.

Presenters are asked to prepare their talks to match the allocated times which will be rigidly enforced.
Poster information
You can mount your poster from **09:00 on Monday 7 April 2014**. The dedicated poster session will take place on Monday from 16:30. Posters must not be larger than **A0** in size and should be a **portrait** format. The poster board measures 6ft (1830mm) tall by 3ft (940mm) wide, in a portrait format and therefore if your poster does not fit within these dimensions, we cannot guarantee it will be displayed. Fixing material will be provided to mount your poster. All posters must be removed on **Tuesday 8 April 2014 at 17:00**. Although organisers will endeavour to save poster material, no guarantee can be made for posters not removed by this time.

**Magnetism 2014 programme**

**Monday 7 April 2014**

**Monday 7 April**

09:00 Registration and refreshments

10:00 Location: Theatre C2

**Session: Spintronics 1**

*Invited: Silicon spintronics*
R Jansen, National Institute of Advanced Industrial Science and Technology (AIST), Japan

10:30 **Observation of Rashba zero-field spin splitting in a Ge 2D hole gas**
C Morrison, University of Warwick, UK

10:45 **Spin accumulation and detection in a single CoFe nanoparticle**
R Temple, University of Leeds, UK

11:00 **Kondo physics in non-local metallic spin transport devices**
L O’Brien, University of Minnesota, USA

11:15 **Spin filtering through ferromagnetic insulating manganite tunnel barriers**
B Prasad, University of Cambridge, UK

11:30 **Temperature dependence of spin hall magnetoresistance in thin YIG/Pt films**
S Marmion, University of Leeds, UK

11:45 **Curie behaviour in the dilute ferromagnetic semiconductor (Ga,Mn)As**
B Gallagher, University of Nottingham, UK

12:00 **Interfacial contribution to in-plane anisotropic magnetoresistance**
S Jaiswal, Durham University, UK

12:15 **Influence of a pure spin current on the magnetization dynamics of a single nanomagnet**
P Keatley, University of Exeter, UK

11:00 Location: Theatre D7

**Session: Correlated electrons**

*Invited: Magnetic phenomena in strongly-correlated 5d oxides*
A Boothroyd, University of Oxford, UK

**10:30 Observation of Rashba zero-field spin splitting in a Ge 2D hole gas**
C Castelnovo, University of Cambridge, UK

**10:45 Spin accumulation and detection in a single CoFe nanoparticle**
R Temple, University of Leeds, UK

**11:00 Kondo physics in non-local metallic spin transport devices**
L O’Brien, University of Minnesota, USA

**11:15 Spin filtering through ferromagnetic insulating manganite tunnel barriers**
B Prasad, University of Cambridge, UK

**11:30 Temperature dependence of spin hall magnetoresistance in thin YIG/Pt films**
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B Gallagher, University of Nottingham, UK

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S Jaiswal, Durham University, UK

**12:15 Influence of a pure spin current on the magnetization dynamics of a single nanomagnet**
P Keatley, University of Exeter, UK
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<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>12:30</td>
<td>Magnetonic charge pumping via spin-orbit coupling</td>
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<td></td>
<td>C Ciccarelli, University of Cambridge, UK</td>
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<td></td>
<td>End of session</td>
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<tr>
<td>12:45</td>
<td>Lunch (location: Foyer)</td>
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<td>14:00</td>
<td>Location: Theatre C2</td>
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<td></td>
<td>Session: Thin films</td>
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<td></td>
<td>Invited: Thin film head readers from 1 - 2 Tbps: challenges and some solutions</td>
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<td></td>
<td>M Kief, Seagate Technology LLC, USA</td>
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<tr>
<td>14:30</td>
<td>Interdiffusion at the NiFe/Ge interface studied by x-ray photoelectron spectroscopy</td>
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<td>G Bell, University of Warwick, UK</td>
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<td>14:45</td>
<td>Development of magnetostrictive films for MEMS sensors</td>
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<td></td>
<td>N Morley, University of Sheffield, UK</td>
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<td></td>
<td>Influence of strain and crystallinity on magnetic order and moments in rare earth metal thin films</td>
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<td>G Scheunert, Weizmann Institute of Science, Israel &amp; Queen’s University Belfast, UK</td>
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<tr>
<td>15:00</td>
<td>Realizing a high magnetic moment in rare earth laminates X/Cr/FeCo (X=Gd, Dy, GdDy and Tb)</td>
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<td>C Ward, Queen’s University Belfast, UK</td>
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<tr>
<td>14:30</td>
<td>Structural and magnetic properties of MBE-deposited Fe films on GaN (0001)</td>
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<td>J-Y Kim, University of Cambridge, UK</td>
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<td>15:45</td>
<td>Mapping spatial variations in iron oxide phases in magnetite thin films using infrared reflectance microscopy</td>
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<td></td>
<td>S Thompson, University of York, UK</td>
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<tr>
<td>16:00</td>
<td>Investigation of antiferromagnetic structure and ordering in tetragonal epitaxial CuMnAs</td>
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<td></td>
<td>P Wadley, University of Nottingham, UK</td>
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<tr>
<td>16:15</td>
<td>Growth of high-quality nanometre thick yttrium iron garnet films by sputtering and their magnetic properties</td>
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<td>A Mitra, University of Leeds, UK</td>
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<tr>
<td>16:30</td>
<td>Posters and refreshments (location: Foyer)</td>
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<tr>
<td>18:00</td>
<td>Location: Theatre C2</td>
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<tr>
<td></td>
<td>Special plenary lecture from Professor Sir Andre Geim on magnetic phenomena in Graphene</td>
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<tr>
<td>19:30</td>
<td>Reception and conference dinner (Palace Hotel)</td>
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**Session: Magnetic structure and methods**

**Invited**: Molecular spintronics

G Aeppli, University College London, UK

**VAMPIRE**: open source software for atomistic simulation of magnetic materials

R Evans, University of York, UK

**Electronic and magnetic properties of bimetallic L10 cuboctahedral clusters by means of fully relativistic density-functional-based calculations**

R Cuadrado, University of York, UK

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**Fluctuating local moments, itinerant electrons and the magnetocaloric effect: the compositional hypersensitivity of FeRh**

J Staunton, university of Warwick, UK

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**Half metallic antiferromagnetic of doped TiO₂, Rutile with doubles impurities (Os, Mo) from Ab initio calculations**

M Ouchri, Université Mohammed V-Agdal, Morocco

**Stable tetragonal distortions and significantly increased magnetocrystalline anisotropies in FeCo alloys with C or B doping**

A Edstrom, Uppsala University, Sweden

**Mapping the distribution of the electric field in a microwave cavity by transmission electron microscopy**

F J T Goncalves, University of Glasgow, UK

**Ink-jet printing functional magnetic materials**

K V Rao, Royal Institute of Technology, Sweden

**Magnetically barcoded microcarriers and fabrication of nanostructures through self-assembly techniques**

D Love, University of Cambridge, UK
Tuesday 8 April

09:00 Location: Theatre C2

Wohlfarth plenary lecture: Nano-Spintronic Devices
A Hirohata, University of York, UK

10:00 Refreshment break (location: Foyer)

10:30 Location: Theatre C2
Session: Spintronics II
Invited: Spin transport in organic materials: from single molecules to crystals
S Sanvito, Trinity College Dublin, Ireland

11:00 Location: Theatre D7
Session: Nanostructures and domain walls
Invited: Giant topological Hall effect in strained Fe$_{0.7}$Co$_{0.3}$Si epilayers
C Marrows, University of Leeds, UK

11:00 Understanding organic spin-valves
N Morley, University of Sheffield, UK

11:15 Planar organic spin valves using shaped magnetic nanostructures
H Alqahtani, King Saud University, Saudi Arabia

11:30 Hole injection from ferromagnetic material to tris (8-hydroxyquinoline) aluminium (Alq3) and subsequent transport
H Zhang, Queen Mary University of London, UK

11:45 DMI meter: Dzyaloshinskii-Moryia interaction in materials with out-of-plane anisotropy
A Hrabec, University of Leeds, UK

12:00 Extrinsic spin orbit interaction in thin films
A Westerman, University of Leeds, UK

12:15 Torqueing magnets with electricity
A Ferguson, University of Cambridge, UK

12:30 Time-resolved Kerr imaging of magnetization dynamics generated by a nano-contact spin transfer vortex oscillator
P Keatley, University of Exeter, UK

12:45 Current-induced torques in ferromagnet/antiferromagnet bilayers
V Tshitoyan, University of Cambridge, UK

13:00 Spin noise correlation in n-doped gallium arsenide
M Hodgson, University of York, UK

13:15 Lunch (location: Foyer)
14:15 Location: Theatre C2

**Session: Magnetization dynamics**

Invited: 3-dimensional ratchet for spintronic memory and logic  
R Cowburn, University of Cambridge, UK

14:45 Voltage controlled modification of flux closure domains in planar nanostructures for microwave applications  
S Cavill, University of York, UK

15:00 Dynamic structure of magnetic domain walls and their trajectory at nanowire vertices  
D Burn, Imperial College London, UK

15:15 Imaging real and magnetic field driven dynamics of artificial spin ice using transmission xray microscopy (TXM)  
S Morley, University of Leeds, UK

15:30 Refreshment break (location: Foyer)

16:00 Domain wall reflection and magnonic crystal  
P Borys, University of Glasgow, UK

16:15 Coupled vortex dynamics in arrays of nanomagnets  
W Yu, University of Exeter, UK

16:30 Fabrication of micro-inductors using electrochemical deposition of magnetic alloy films  
A Walton, University of Edinburgh, UK

16:45 Modelling the HAMR process in a high anisotropy FePt granular thin film  
L Atkinson, University of York, UK

17:00 Time-resolved Kerr microscopy of coupled transverse domain walls in a pair of curved nanowires  
P Keatley, University of Exeter, UK

17:15 Correlation of mechanical, high frequency magnetic, electrical and structural properties of electroplated ferromagnetic films studied by automated wafer mapping  
E Sirotkin, University of Edinburgh, UK

17:30 End of conference

Location: Theatre D7

**Session: Soft matter and biomagnetism**

Invited: Manipulating the dimensionality of molecule-based magnets  
T Lancaster, Durham University, UK

Investigation of spin crossover phenomena in solution-processable polymeric materials  
G Bovo, Imperial College London, UK

Developing biotemplated nanoparticles for data storage applications  
J Galloway, University of Leeds, UK

Formation of octapod MnO nanoparticles with enhanced magnetic properties through kinetically controlled thermal decomposition of polynuclear manganese complexes  
D MacLaren, University of Glasgow, UK

16:00 Magnetic transitions and critical performance in Cu-Guanidinium formate  
S Han, Queen Mary, University of London, UK

16:15 Dipolar-driven magnetic ordering in a molecular nanodisc system  
F Pratt, STFC, UK

16:30 Theoretical modelling of electronic structure and exchange interactions in metal-phthalocyanines  
W Wu, University College London, UK

16:45 Controlling spin-exchange at the organic/inorganic interface: On-surface magneto-chemistry  
J Girovsky, Paul Scherrer Institut, Switzerland

17:00 Manipulation of resistivity and molecular dynamics using ferromagnetic resonance and phonon injection in hybrid-magneto-organic devices  
M Wheeler, University of Leeds, UK

17:15 Electron spin relaxation in organic semiconductors by muon spectroscopy  
K Wang, Queen Mary, University of London, UK

17:30 End of conference
Magnetism 2014

1. Renold Building
2. Staff House
3. Barnes Wallis Building
4. Sackville Street Building

- Principal Car Parks
- Accessible Route
- Bus Stops
- Railway Stations
Magnetism 2014
The organisers would like to thank the following exhibitors for their contribution to making this conference a success.

The IOP Yorkshire Branch
The IOP Groups Committee