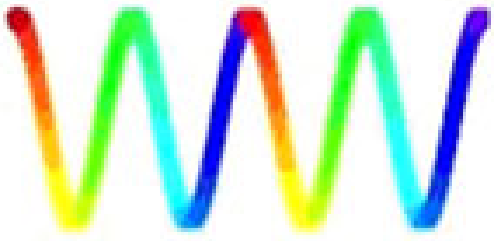
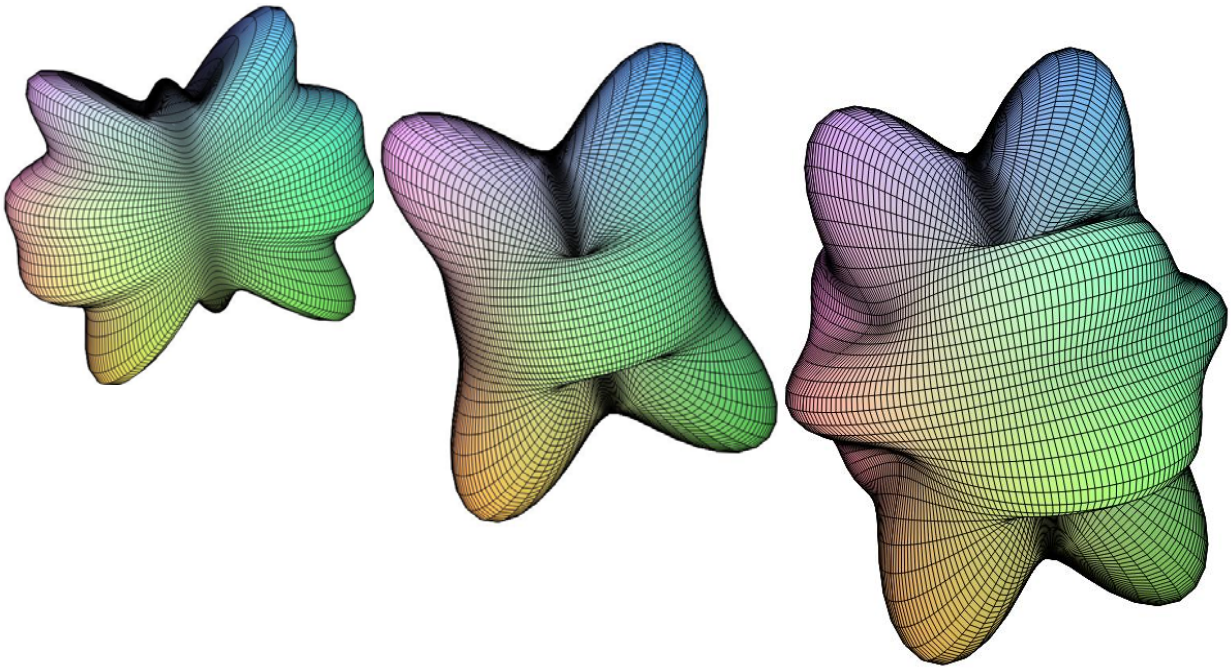
Proceedings of the 36th Annual Condensed Matter and Materials Meeting



Wagga 2012



Charles Sturt University, Wagga Wagga, NSW
31st January – 3rd February, 2012

ISBN: 978-0-646-57071-6

Editorial Note
Proceedings of Wagga 2012
The 36th Annual Condensed Matter and Materials Meeting

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Editor: Glen Stewart

The 36th Annual Condensed Matter and Materials Meeting was held at Charles Sturt University, Wagga Wagga, NSW from 31st January – 3rd February, 2012. There were 107 attendees, including international visitors from China, Israel, New Zealand, Turkey, USA and the UK. A total of 11 invited and 16 contributed oral papers were presented during the two and one half days of scientific sessions. There were also two sessions with a total of 74 poster presentations. All presenters were invited to submit a manuscript (six pages for invited papers and four for contributed papers) for publication in the conference proceedings. Each manuscript was refereed by at least two anonymous reviewers who worked to a set of guidelines made available by the editor. Each accepted publication therefore satisfies the requirements for classification as a fully refereed conference publication (E1). The organisers would like to thank the 32 reviewers for their time and effort in reviewing manuscripts, which resulted in 22 papers being accepted for publication. The accepted manuscripts are available at the on-line publication section of the Australian Institute of Physics national web site (http://www.aip.org.au/).

Organising committee: Wayne Hutchison (chair),
Annemieke Mulders (scientific program), Hans Riesen,
Heiko Timmers, Stewart Campbell and Glen Stewart

Date: June 2012

2012 OVERALL TIMETABLE

Tuesday 31 January

16:00 -	Registration desk open
16:00 – 18:00	*Conference bar open*
18:00 – 19:30	*Dinner*
19:00 -	Posters wp1-wp37 to be mounted

Wednesday 1 February

07:30 – 08:30	*Breakfast*
09:00 – 09:10	Conference opening
09:10 – 10:30	Oral Session: Papers wo1-wo3
10:30 – 11:00	*Morning tea*
11:00 – 12:30	Oral Session: Papers wo4-wo7
12:30 – 14:00	*Lunch*
14:00 – 14:50	Oral Session: Papers wo9, tp3
14:50 – 15:30	Poster Advertisement wp1-wp37
15:30 – 16:00	*Afternoon Tea*
16:00 – 18:00	Poster Session: Papers wp1-wp37
18:00 -	Posters: tp1-tp37 to be mounted
16:30 – 18:00	*Conference bar open*
18:30 – 22:00	Conference Dinner (sponsored by ANSTO)

Thursday 2 February

07:30 – 08:30	*Breakfast*
09:00 – 10:30	Oral Session: Papers to1-to4
10:30 – 11:00	*Morning tea*
11:00 – 12:30	Oral Session: Papers wo8, to6-to8
12:30 – 14:00	*Lunch*
14:00 – 15:00	Oral Session: Papers to9-to10
15:00 – 15:30	Poster Advertisement tp1-tp37
15:30 – 16:00	*Afternoon Tea*
16:00 – 18:00	Poster Session: tp1-tp37
16:30 – 18:00	*Conference bar open*
18:00 – 19:30	*Dinner*
19:30 – 22:00	Trivia Quiz (Lindsay Davis Cup)

Friday 3 February

07:30 – 08:30	*Breakfast*
09:00 – 10:30	Oral Session: Papers fo1-fo4
10:30 – 11:00	*Morning tea*
11:00 – 12:20	Oral Session: Papers fo5-fo7
12:20 – 12:40	Presentations and Closing
12:40 – 14:00	*Lunch*

WW2012 PROGRAM

Tuesday 31 January

16:00 -	Registration desk open
16:00 – 18:00	Conference bar open
18:00 – 19:30	Dinner

Wednesday 1 February

09:00 – 09:10 **Opening:** ***Wayne Hutchison, UNSW Canberra***

09:10 – 10:30 **Chairperson:** ***Annemieke Mulders, UNSW Canberra***

09:10 – 09:40 wo1 Nanostructured Materials for Efficient Performance *INVITED*
Anita Hill, CSIRO Materials Science and Engineering, Clayton

09:40 – 10:00 wo2 Investigating Short-Range Order in Triglycine Sulphate using X-ray and Neutron Diffuse Scattering
Jessica Hudspeth, Australian National University

10:00 – 10:30 wo3 Microstructural-property relations in brittle materials: from A to Z
Jodie Bradby, Australian National University *INVITED*

10:30 – 11:00 **Morning tea**

11:00 – 12:30 **Chairperson:** ***Roger Lewis, University of Wollongong***

11:00 – 11:30 wo4 Superconducting phase qubits and coherent defects: Unravelling the mystery of two-level fluctuators *INVITED*
Jared Cole, RMIT University

11:30 – 11:50 wo5 Fabrication, Characterization and Applications of $Si_{1-x}Ti_xO_2$ (x = 0-1) Inverse Opal Photonic Crystals
Zakiya Al-Azri, University of Auckland

11:50 – 12:10 wo6 The Effects of Optical Intensity and Excited State Quenchers on the Photostability of Electro-Optic Chromophores
Yasar Kutuvantavida, Industrial Research Ltd, New Zealand

12:10 – 12.30 wo7 Photomodulated Reflectance of GaAs and p-type GaAs:Be
Julian Steele, University of Wollongong

12:30 – 14.00 **Lunch**

14:00 – 15:30 **Chairperson:** ***Heiko Timmers, UNSW Canberra***

14:00 – 14:30 wo9 Mapping of Domain Orientation and Molecular Order in Polycrystalline Semiconducting Polymer Films with Soft X-Ray Microscopy
Chris McNeill, Monash University *INVITED*

14:30 – 14:50 tp3 Development of novel visible-light driven photocatalysts for hydrogen production
Vedran Jovic, University of Auckland

14:50 – 15:30 Poster Advertisement wp1-wp37: selected 2 minute talks

15:30 – 16:00 **Afternoon Tea**

16:00 – 18:00 **Poster Session:** wp1-wp37

18:30 – 22:00 **Conference Dinner (sponsored by ANSTO)**
A Brief history of Quasicrystals *INVITED*
Darren Goossens, ANU

Thursday 2 February

09:00 – 10:30		**Chairperson: *John Barthelomew, ANU***
09:00 – 09:30	to1	Advanced materials for lithium rechargeable batteries, supercapacitors and hydrogen storage *Hua Kun Liu, University of Wollongong* *INVITED*
09:30 – 09:50	to2	Positron Annihilation Lifetime Spectroscopy within CAMS *Lou Vance, ANSTO*
09:50 – 10:10	to3	Effect of protein on electrochemical properties of diamond *Kate Fox, University of Melbourne*
10:10 – 10:30	to4	Dynamics of Globular Proteins in Crowded Electrolyte Solutions *Marcus Hennig, ANSTO*
10:30 – 11:00		**Morning tea**
11:00 – 12:30		**Chairperson: *Oleg Sushkov, UNSW***
11:00 – 11:30	wo8	Neutron Scattering Study on the Fe-based High-Tc Superconductors *Wei Bao, Renmin Universit of China* *INVITED*
11:30 – 11:50	to6	Change of the Fermi Surface Topology in the Vicinity of a Magnetic Quantum Critical Point *Michael Holt, UNSW*
11:50 – 12:10	to7	Magnetic Properties of a Cylindrical Spin-1 Core/Shell Ising Nanowire within the Effective-Field Theory *Mustafa Keskin, Erciyes University, Turkey*
12:10 – 12.30	to8	Suppression of the spin spiral in an antiferromagnetic $BiFe_{0.5}Mn_{0.5}O_3$ thin film and powder *David Cortie, University of Wollongong*
12:30 – 14.00		**Lunch**
14:00 – 15:30		**Chairperson: *Klaus Dieter Liss, ANSTO***
14:00 – 14:30	to9	How neutrons support modern materials engineering and helped unravel some historical engineering puzzles *Anna Paradowska, ANSTO* *INVITED*
14:30 – 15:00	to10	Switching between differing magnetic exchange spring states in an $ErFe_2/YFe_2$ multilayer observed by Er X-ray magnetic circular dichroism *Graham Bowden, University of Southampton, UK*
15:00 – 15:30		Poster Advertisement tp1-tp37: selected 2 minute talks
15:30 – 16:00		**Afternoon Tea**
16:00 – 18:00		**Poster Session:** tp1-tp37
18:00 – 19:30		**Dinner**
19:30 – 22:00		**Trivia Quiz, Conference Centre** *Quizmaster: Trevor Finlayson, University of Melbourne*

Friday 3 February

09:00 – 10:30		**Chairperson: *John Cashion, Monash University***
09:00 – 09:30	fo1	Mössbauer measurements on magnetic nanoparticles *INVITED* *Charles Johnson, University of Tennessee, USA*
09:30 – 09:50	fo2	Numerical Device Model and Determination of Device Parameters for Organic Light Emitting Diodes (OLEDs) *Tadahiko Hirai, Materials Science and Engineering, CSIRO, Clayton*
09:50 – 10:10	fo3	Reinforcing Function of Surface Acetylated Cellulose on Polylactic Acid (PLA) based Biopolymer *Tapasi Mukarjee, RMIT University*
10:10 – 10:30	fo4	A study of gas phase and surface formaldehyde polymerisation from first principles *Philip McGill, University of Auckland*
10:30 – 11:00		**Morning tea**
11:00 – 12:20		**Chairperson: *Tilo Söhnel, University of Auckland***
11:00 – 11:30	fo5	Orbital Physics in Titanates and Vanadates *INVITED* *Clemens Ulrich, UNSW*
11:30 – 11:50	fo6	Thermal and pressure induced spin crossover in a cobalt(II) imide complex *Suresh Narayanaswamy, MacDiarmid Institute*
11:50 – 12:20	fo7	Multidimensional Spectroscopy for Revealing Femtosecond Dynamics in Complex Condensed Matter Systems *Jeff Davis, Swinburne University of Technology* *INVITED*
12:20 – 12:40		**Awards and Closing: *Wayne Hutchison, UNSW Canberra***
12:40 – 14.00		**Lunch**

POSTER SESSION: Wednesday 1 February

wp1 Muhammad Hamid Ahmed
Relative thermodynamical stability of non-stoichiometric uranium dioxide

wp2 T.J.Bastow, C.R.Hutchinson and A.J.Hill
Strong Interaction of an Intermetallic Platelet with its Boundary

wp3 C.J. Davidson, T.R. Finlayson, J.R. Griffiths, V. Luzin and Q.G. Wang
Neutron Diffraction Determination of Macro and Microstresses in an Al Si Mg Composite and Observed Changes with Plastic Strain

wp4 M. S. Scott, G. I. N. Waterhouse, K. Kato, S. L. Y. Chang, T. Söhnel
XPS, XAS and HRTEM studies of Rh,Pd/CeO2 nanocatalyst activation under conditions relevant to Ethanol Steam Reforming

wp5 L. Thoennessen, K.D. Liss, R. Dippenaar and A. Dehghan-Manshadi
Thermomechanical Processing of Titanium Alloys

wp6 A. Rozario, K. Fox, D. Garrett, S. Lichter, K. Ganesan, H. Meffin, and S. Prawer
Optimizing adhesion of parylene-C to diamond under long-term in vivo conditions

wp7 Jean N D Goder, Nurafini A M Rafi, Gary Bryant, Taavi Hunt, Ben Kent, Chris Garvey
Study of the effect of Penetratin on the gyroid to diamond phase transition in Myverol

wp8 Sidney B. Lang
Pyroelectric, Piezoelectric and Photoeffects in Hydroxyapatite Thin Films on Silicon

wp9 Y.Y. Liu, J.A. Warner, L.G. Gladkis, J.M. Scarvell, P.N. Smith, H. Timmers
Localized Backside Wear Measurement on UHMWPE Prosthesis Insert Using Micro-scratching

wp10 Gordon J. Troup and John F.Boas
An EPR Study of 'Mineral Organic Formula' and 'Vein Eze' Dietary Supplements

wp11 G. J. Bowden, R. C. C. Ward K. N. Martin, and P. A. J. de Groot
^{89}Y NMR-hyperfine relaxation times and transport in MBE grown $REFe_2/YFe_2$ multilayer films

wp12 J. Bertinshaw, R. Maran, N.Valanoor, F.Klose and C. Ulrich
Neutron studies of functional multiferroic BiFeO3 thin films

wp13 S. Brück, M. Paul, H. Tian, A. Müller, K. Fauth, E. Goering, J. Verbeeck, G. Van Tendeloo, M. Sing, R. Claessen
Local Magnetic Structure at the Fe3O4/ZnO Interface

wp14 W.D. Hutchison, N.J. Segal and K. Nishimura
Investigation of Magnetocaloric Effects in $RNiAl_4$

wp15 S. Brazier-Hollins and D. J. Goossens
Time-Dependent Magnetisation in $Fe_{0.5}Ni_{0.5}PS_3$

wp16 R.A. Mole, L.F. Montero, M. Nadeem, V.K. Peterson, R. Piltz and J.A. Stride
Neutron Scattering Studies of Magnetic Coordination Polymers

wp17 P. Rovillain, R. de Sousa , Y. Gallais, A. Sacuto, M-A. Measson, D. Colson, A. Forget, M.Bibes, A. Barthelemy, and M. Cazayous
Electric control of spin wave modes at room temperature in $BiFeO_3$

wp18 P. J. Graham, M. Bartkowiak, A. M. Mulders, M. Yethiraj, E. Pomjakushina and C. Ulrich
Raman Scattering on Multiferroic $TbMnO_3$

wp19 C.J. Hamer and J. Oitmaa
Restoration of Symmetry in the Spectrum of the Bilayer Heisenberg Antiferromagnet

wp20 R.R.P. Singh and J. Oitmaa
Thermodynamic Properties of the Heisenberg Antiferromagnet on the Hyperkagome Lattice: Comparison with $Na_4Ir_3O_8$

wp21 A. J. Princep, A. M. Mulders, E Schierle, E Weschke, J Hester,W D Hutchison, Y Tanaka, N Terada, Y Narumi, U Staub, V Scagnoli, T Nakamura, A Kikkawa, S W Lovesey, E Balcar,
Resonant X-ray Diffraction and the observation of Strange Quantities.

wp22 Y. Kulik and O. P. Sushkov
Hole dispersion in the t-J model in the presence of charge modulation

wp23 F. Bachhuber, J. Rothballer, T. Söhnel and R.Weihrich
A quantum mechanical investigation of the crystal and electronic structures of solid solutions of pyrite-type dipnictides MPn_2 (M = Si, Ge, Ni, Pd, Pt)

wp24 M.N. Read
Self-energy effects and the unbound electronic structure of Cu(111) surface

wp25 Gordon J. Troup, David Paganin, and Andrew Smith
Cutting Entanglement

wp26 J. G. Bartholomew and M. J. Sellars
Optical detection of a single rare earth ion in a solid state host

wp27 J.G. Bartholomew, S. Marzbana M.J. Sellars and R.P. Wang
Spectroscopic Properties of Eu^{3+}: Y_2O_3 Thin Films

wp28 M. Zhong, M. J. Sellars
Extending Hyperfine Coherence Times in $EuCl_3.6H_2O$

wp29 Jan Jeske and Jared H Cole
Quantum decoherence in complex environments

wp30 Timothy C. DuBois, Manolo C. Per, Salvy P. Russo and Jared H. Cole
Delocalised Oxygen model of TLS defects in superconducting phase qubits

wp31 Adurafimihan A. Abiona, William J. Kemp, Mark C. Ridgway, Heiko Timmers
Characterization of a Defect-Pair in Germanium

wp32 G William J. Kemp, Adurafimihan A. Abiona, Patrick Kessler,
Reiner Vianden, Heiko Timmers
First measurements of the quadrupole coupling constant for ^{100}Pd/Rh in antimony, hafnium and rhenium

wp33 L. M. Lepodise and R. A. Lewis
Absorption Lines around 70 Mev in Rubidium Bromide (RbBr)

wp34 Z. Liu and H. Riesen
Photoluminescence and Crystallographic Sites of Sm ions in BaFCl Nanocrystals

wp35 M. M. Rao and R. A. Lewis
Emissivity of Silicon Carbide in THz Spectral Range

wp36 J. S. Smith, D. W. Drumm, A. Budi, M. C. Per, L. C. L. Hollenberg and S. P. Russo
Density functional study of epitaxially-doped nanowires of phosphorus in silicon

wp37 Baran Yildirim, Glen Stewart and Hans Riesen
Structural and Optical Properties of Nanocrystalline $LiGa_5O_8:Fe^{3+}$

POSTER SESSION: Thursday 2 February

tp1 G.P. Cousland, R. Mole, M. Elcombe, X.Y. Cui, A.E. Smith, C.M. Stampfl and A.P.J. Stampfl
The structure of Yttria-stabilised Zirconia: a combined synchrotron photoemission, neutron scattering and ab-initio investigation

tp2 Xuan-Wen Gao, Chuan-Qi Feng, Shu-Lei Chou, Jia-Zhao Wang, Jia-Zeng Sun, Maria Forsyth, Douglas R. MacFarlane, Hua Kun Liu
5 V $LiNi_{0.5}Mn_{1.5}O_4$ Spinel Cathodes Using Room Temperature Ionic Liquid as Electrolyte

tp3 V. Jovic, G.I.N Waterhouse and T. Soehnel
Development of novel visible-light driven photocatalysts for hydrogen production

tp4 Sridhar Kumar Kannam, B. D. Todd, J. S. Hansen, Peter. J. Daivis
Flow rates of fluids in carbon nanotubes

tp5 I. Shvab and Richard J. Sadus
Hydrogen Bonding and Polarisational Properties of Water: Predictions from MCYna Model

tp6 Tesfaye M. Yigzawe and Richard J. Sadus
Calculation of Thermodynamic Properties of Lennard-Jones Fluid in a Molecular Dynamics Ensemble

tp7 Jan Herrmann, Bakir Babic, Chris Freund, Malcolm Gray, Magnus Hsu and Terry McRae
A metrological scanning probe microscope incorporating a tuning fork sensor and heterodyne laser interferometry

tp8 P Imperia
Sample Environments Updates at the Bragg Institute

tp9 W.T. Lee, F. Klose, D. Jullien and K. Andersen
Polarised ^{3}He based Neutron Polarisers and Analysers for Magnetism Research on ANSTO Instruments

tp10 Guochu Deng, Peter Vorderwisch, Chun-Ming Wu, Garry McIntyre, Wen-Hsien Li
Simulation of Multiple Operation Modes for the Cold Neutron Triple Axis Spectrometer SIKA at Bragg Institute

tp11 Richard A. Mole and Dehong Yu
Pelican: An Inelastic Neutron Scattering Spectrometer With Polarization Analysis

tp12 G.J. McIntyre, H. Kohlmann and B.T.M. Willis
Phonons observed by neutron Laue diffraction

tp13 Klaus-Dieter Liss
X-Rays of the Future: Thinking Energy Recovery Linac

tp14 Theo Hughes and Gordon J.Troup
A Simple Student-made Optical Spectrometer Modified for Gemmology Use

tp15 Gordon J.Troup
A Thermodynamic / Information Theory Analysis of Library Operation

tp16 G D. Wang, A. R. Buckingham, G. J. Bowden, R.C.C. Ward, and P. A. J. de Groot
Meta-stable magnetic exchange spring states with negative coercivity in $DyFe_2/YFe_2$ multilayer

tp17 S. Brück, D. Cortie, J. Brown, T. Saerbeck, C. Ulrich, F. Klose, and J. Downes
Polarized Neutron Reflectometry of Rare-Earth Nitride Thin Films

tp18 J.L. Wang, S.J. Campbell, S.J. Kennedy, P. Shamba, R. Zeng and S.X. Dou
Magnetic Phase Transition and Thermal Expansion in $LaFe_{13-x-y}\ Co_ySi_z$

tp19 S. J. Collocott, X. Tan and H. Xu
Temperature dependence of the coercivity in $Nd_{60-x}Fe_{30}Al_{10}Dy_x$, x = 0, 2 and 4, bulk amorphous ferromagnets: an example of strong pinning of domain walls

tp20 S.J. Harker, G.A. Stewart, H. Okimoto, K. Nishimura and W.D. Hutchison
Magnetic properties of $Nb_{1-X}Hf_XFe_2$

tp21 N.Narayanan, N.Qureshi, H. Fuess and H.Ehrenberg
Charge, magnetization (spin) and spin momentum density studies of the Kagome staircase compound $Co_3V_2O_8$

tp22 N. M. Reynolds, P. Graham, A.M. Mulders, G. McIntyre, S. Danilkin, J. Fujioka, Y. Tokura, B. Keimer, M. Reehuis and C. Ulrich
Inelastic Neutron Scattering in Multiferroic Materials

tp23 A.M. Mulders, M. Bartkowiak, J.R. Hester, E. Pomjakushina, K. Conder
Ferroelectric charge order stabilized by antiferromagnetism in multiferroic $LuFe_2O_4$

tp24 J. Oitmaa and R.R.P. Singh
The Spin-3/2 Heisenberg Antiferromagnet on the Bilayer Honeycomb Lattice : A Model for $Bi_3Mn_4O_{12}\ (NO_3)$

tp25 Rakesh Kumar and Oleg P. Sushkov
Condensation of composite objects in Heisenberg-like models

tp26 O. P. Sushkov
Magnetic properties of lightly doped antiferromagnetic YBCO

tp27 D. Bende T. Söhnel
Exploring structural Oddities in Tin Cluster Compounds $RuMSn_6O_8$ (M = Fe, Co, Mn) with Quantum Mechanical Methods

tp28 J. Stephen and G. V. M. Williams
The Magnetic and Electronic Properties of $FeSr_2YCu_2O_{6+x}$ and $FeSr_2Y_{2-x}Ce_xCu_2O_{8+x}$

tp29 Heather Schijns, Ian Jackson and Douglas R Schmitt
Laboratory Measurements of Frequency-Dependent Seismic Properties of Cracked and Fluid-Saturated Media

tp30 J.D. Cashion, K. Suzuki and E. Murad
Mössbauer Spectra of the Acid Mine Drainage Mineral Schwertmannite from the Sokolov Basin, Czech Republic

tp31 R.A. Pax and G.A. Stewart
Quantitative Determination of Phases using Mössbauer Spectroscopy and X-ray Diffraction: A Case Study Using the Fe-Ti-O System

tp32 R. L. Ahlefeldt and M. J. Sellars
Characterisation of $EuCl_3.6H_2O$ for quantum computation

tp33 K. R. Ferguson, S. E. Beavan and M. J. Sellars
Rephasing Spontaneous Emission in a Rare-Earth Ion-Doped Solid

tp34 Milos Rancic, Sarah Beavan and Matthew Sellars
Optical Imaging and Structure Writing in Rare Earth Ion Doped Crystals

tp35 W.D. Hutchison, S.J Harker, P.G. Spizzirri, F. Hoehne, and M.S. Brandt
Electrically Detected Magnetic Resonance Applied to Near Surface Phosphorus Donors in Silicon

tp36 T. Li, O.P. Sushkov and U. Zuelicke
Spin precession and non-adiabaticity in hole quantum point contacts

tp37 D. J. Miller
Implementation of the PBR protocol using spin-spin interactions

Papers

1. WO05- Fabrication, Characterization and Applications of $Si_{1-x}Ti_xO_2$ (x = 0 - 1) Inverse Opal Photonic Crystals
   Z.H. Al-Azri and G.I.N. Waterhouse

2. FO01 - Mössbauer Measurements on Spinel-structure Iron Oxide Nanoparticles
   C.E. Johnson, L. Costa, S. Gray, J.A. Johnson, A.J. Krejci, S.A. Hasan, I. Gonzalo-Juan and J.H. Dickerson

3. FO02 - Numerical Device Model and Determination of Device Parameters for Organic Light Emitting Diodes (OLEDS)
   T. Hirai, K. Weber, J. O'Connell, M. Brown and K. Ueno

4. FO03 - Reinforcing Function of Surface Acetylated Cellulose on Polylactic Acid (PLA) Based Biopolymer
   T. Mukherjee, N. Kao, Rahul K. Gupta, N. Quazi and S.N. Bhattacharya

5. FO06 - Thermal and Pressure-Induced Spin Crossover in a Cobalt(II) Imide Complex
   N. Suresh, M.G. Cowan, J. Olguin, J.L. Tallon and S. Brooker

6. WP03 - Neutron Diffraction Determination of Macro and Microstresses in an Al-Si-Mg Composite and Observed Changes with Plastic Strain
   C.J. Davidson, T.R. Finlayson, J.R. Griffiths, V. Luzin and Q.G. Wang

7. WP09 - Localised Wear Measurements Using Micro-scratching on the Backside of a UHMWPE Knee Prosthesis Insert
   Y. Liu, J.A. Warner, L.G. Gladkis, J.M. Scarvell, P.N. Smith and H. Timmers

8. WP11 - ^{89}Y NMR Hyperfine Relaxation Times and Transport in MBE Grown $REFe_2/YFe_2$ Multilayer Films
   G.J. Bowden, R.C.C. Ward, K.N. Martin and P.A.J. de Groot

9. WP14 - Investigation of Magnetocaloric Effects in Polycrystalline $RNiAl_4$ (R = Gd, Dy)
   W.D. Hutchison, N.J. Segal and K. Nishimura

10. WP19 - Restoration of Symmetry in the Spectrum of the Bilayer Heisenberg Antiferromagnet
    C.J. Hamer, J. Oitmaa and Zheng Weihong

11. WP23 - A Quantum Mechanical Investigation of the Crystal and Electronic Structures of Solid State Solutions of Pyrite-type Dipnictides MPn_2 (*M* = Si, Ge, Ni, Pd, Pt)
    F. Bachhuber, J. Rothballer, T. Söhnel and R. Weihrich

12. WP24 - Self-energy Effects and the Unbound Electronic Structure of the Cu(111) Surface
    M.N. Read

13. WP25 - Cutting Entanglement [see also *Aust. Phys.* **49** (2012) 49]
    G. Troup, D. Paganin and A. Smith

14. WP34 - Temperature Dependent Photoluminescence Properties of Nanocrystalline $BaFCl:Sm^{3+}$ X-ray Storage Phosphor
    Z. Liu and H. Riesen

15. WP37 - Structural and Optical Properties of Nanocrystalline $LiGa_5O_8:Fe^{3+}$
    B. Yildirim, G.A. Stewart and H. Riesen

16. TP10 - Simulation of Energy Dispersive Mode for RITA-type Cold Neutron Triple Axis Spectrometer SIKA
    G. Deng, P. Vorderwisch, C-M. Wu, G. McIntyre and W-H. Li

17. TP16 - Meta-stable Magnetic Exchange Spring States with Negative Coercivity in $DyFe_2/YFe_2$ Multiklayers
    D. Wang, A.R. Buckingham, G.J. Bowden, R.C.C. Ward and P.A.J. de Groot

18. TP22 - Inelastic Neutron Scattering in Multiferroic Materials
    N.M. Reynolds, P. Rovillain, P. Graham, A.M. Mulders, G. McIntyre, S. Danilkin, K. Schmalzl, M. Reehuis, S. Miyasaka, J. Fujioka, Y. Tokura, B. Keimer and C. Ulrich

19. TP27 - Exploring Structural Oddities in Tin Cluster Compounds $Ru*M*Sn_6O_8$ (*M* = Mn, Fe, Co) with Quantum Mechanical Methods
    D. Bende and T. Söhnel

20. TP30 - Mössbauer Spectra of the Acid Mine Drainage Mineral Schwertmannite from the Sokolov Basin, Czech Republic
    J.D. Cashion and E. Murad

21. TP31 - Quantitative Determination of Phases Using Mössbauer Spectroscopy and X-ray Diffraction: A Case Study of the Fe-Ti-O System
    R.A. Pax and G.A. Stewart

22. TP37 – Alternative Experimental Protocol for a PBR-like Theorem
    D.J. Miller