

SIAN E. DUTTON

Cavendish Laboratory, University of Cambridge,
JJ Thomson Road, Cambridge, CB3 0HE
Phone: 01223 764159 or 07577 299183
Email: sed33@cam.ac.uk

EDUCATION

- 2005-2009 Somerville College, Oxford University.
- 2001- 2005 Jesus College, University of Cambridge (2004-2005 secondment to MIT, Cambridge, MA.).

ACADEMIC QUALIFICATIONS

- DPhil in Inorganic Chemistry. viva Feb. 2009.
- MA, MNatSci, Natural Sciences (Chemistry) (1st Class), including research project with Dr David Jefferson. Awarded June 2005.

EMPLOYMENT AND WORK EXPERIENCE

- *October 2015-present, University of Cambridge*
University Lecturer, Department of Physics
- *January 2012-present, University of Cambridge*
Winton Advance Research Fellow working on new electrode materials for Li-ion batteries and other complex oxide materials.
- *November 2013-, University of Cambridge*
Post-doctoral by-fellow at Churchill College.
- *March 2009-December 2011, Princeton University*
Postdoctoral research associate working with Professor Robert Cava on geometrically frustrated magnets.
- *October 2005-February 2009, Oxford University*
DPhil. Research supervised by Professor Peter Battle on the structure and magnetism of mixed-metal oxide materials.
- *October 2007- June 2008, Oxford University*
College Lecturer at St Catherine's College. Taught Inorganic Chemistry to first-third year undergraduate students.
- *October 2006 - June 2007, Oxford University*
Demonstrator for second and third year Inorganic Chemistry laboratory course.
- *Michelmas and Lent Term 2004-2005, University of Cambridge*
Research Project supervised by Dr David Jefferson investigating the structure of mixed oxide vanadium-titanium oxide nanoparticles.
- *Summer 2004 Engineering Materials, University of Sheffield*
Research project on the effect of cation size on the leach rate in barium hollandites, supervised by Dr Neil Hyatt.

RESEARCH FUNDING

November 2012-October 2013, Royal Society, Research Grant, £15,000. PI *Synthesis and Characterisation of New Electrode Materials for Lithium Ion Batteries*.

January 2012-December 2017, Winton Programme for the Physics of Sustainability, Advanced Winton Fellowship, £400,000, PI, *New Electrode Materials for Li-ion batteries*.

INVITED TALKS

Mg-ion batteries as future energy storage solutions in the developing world Smart Villages Battery Technology and Recycling Workshop, Edinburgh, UK, May 2016

Metastable materials for Li-ion batteries UK Energy Storage Meeting, Warwick, UK, November 2015

Geometrically frustrated magnets for magnetic cooling, Condensed Matter in the City, London, UK, July 2015

Metastable materials for Li-ion batteries Invited Speaker, EMRS Autumn Meeting, Warsaw, Poland, September 2014

Geometrically Frustrated Magnets for Solid State Cooling Invited Speaker, 2nd UK-China Function Materials Meeting, Beijing, China, September 2014

Metastable materials for Li-ion batteries Keynote Speaker, Shechtman International Symposium, Cancun, Mexico, July 2014

Geometrically Frustrated Magnets for Solid State Cooling Invited Speaker, 1st International Workshop on Advanced Materials and Energy Applications, Meknes, Morocco, May 2014

Metastable materials for Li-ion batteries Invited Speaker, 2nd Workshop in the Advances in Li-Battery Research, Liverpool, April 2014

Doping in geometrically frustrated magnets: extreme sensitivity to changes in the crystal and electronic structure, Department seminar, University of Kent 27th November 2013

Hole doping and dimensionality in Cr³⁺ geometrically frustrated magnets Invited Speaker, Impurities and Textures in Unconventional Magnets International ISSP-MPIPES Workshop 4th April 2012

Hole doping and dimensionality in Cr³⁺ geometrically frustrated magnets Invited Speaker, APS March Meeting, 28th February 2012

PROFESSIONAL SERVICE

Member of RSC, ACS, and APS.

Reviewer for 10+ journals including Scientific Reports, European Physics Letters, Inorganic Chemistry, Chemistry of Materials, Philosophical Transactions A, Journal of Solid State Chemistry, and Journal of Magnetism and Magnetic Materials.

Reviewer of grant and fellowship applications for DFG, Kings College, Cambridge and Winton Program.

Internal examiner for undergraduate student projects, CPGS, and PhD.

ORGANISATION OF SCIENTIFIC MEETINGS

2015 Organising Committee: Concepts and Discovery in Quantum Matter, 12-15th July 2015, Cambridge, UK (<http://www.qm.phy.cam.ac.uk/CDQM/content/cdqm-2015>)

2017 Organising Committee: European Solid State Chemistry Conference, Strathclyde, UK

TEACHING EXPERIENCE

Cambridge

- Supervisor of 5 graduate students
- Supervisor for Part 1A Physics and Materials Science and Metallurgy
- Supervisor for Part II Physics Research Review
- Supervisor for Part III and MAST Physics Research Projects
- Hosted Work Experience and Summer Research Projects

Other

- College Lecturer (i.e. Supervisor) for 1-3rd year Inorganic Chemistry, Oxford University.
- Laboratory Demonstrator for 2nd Year Inorganic Chemistry Practicals, Oxford University.
- Supervision of research projects in Oxford and Princeton University

PUBLICATIONS

2016

32. *Electronic transitions of iron in almandine-composition glass to 91 GPa*
[*American Mineralogist*, Accepted.](#)
S. M. Dorfman, S. E. Dutton, V. Potapkin, A. I. Chumakov, J.-P. Rueff, P. Chow, Y. Xiao, R. J. Cava, T. S. Duffy, C. A. McCammon, P. Gillet
31. *Synthesis and Optical Properties of Lead-Free Cesium Tin Halide Perovskite Nanocrystals*
[*Journal of the American Chemical Society*, 138\(9\), 2941\(2016\)](#)
T. C. Jellicoe, J. M. Richter, H. F. J. Glass, M. Tabachnyk, R. Brady, S. E. Dutton, A. Rao, R. H. Friend, D. Credginton, N. C. Greenham, M. L. Böhm
30. *LiMnTiO₄ with the Na_{0.44}MnO₂ Structure as a Positive Electrode for Lithium-Ion Batteries*
[*Journal of the Electrochemical Society*, 163, A396 \(2016\)](#)
A. M. Amigues, H. F. J. Glass, S. E. Dutton

2015

29. *Blue-Green Colour Tunable Solution Processable Organolead Chloride-Bromide Mixed Halide Perovskites for Optoelectronic Applications*
[Nano Letters, 15, 6095 \(2015\)](#)
A. Sadhanala, S. Ahmad, B. Zhao, N. Giesbrecht, P. M. Pearce, F. Deschler, R. L.Z. Hoye, K. C. Goedel, T. Bein, P. Docampo, S. E. Dutton, M. De Volder, R. H. Friend
28. *Local Versus Long-Range Diffusion Effects of Photoexcited States on Radiative Recombination in Organic-Inorganic Lead Halide Perovskites*
[Advanced Science 1500136 \(2015\)](#)
M. Vrućinić, C. Matthiesen, A. Sadhanala, G. Divitini, S. Cacovich, S. E. Dutton, C. Ducati, M. Atatüre, H. Snaith, R. H. Friend, H. Sirringhaus, F. Deschler
27. *Elastic and magnetoelastic relaxation behaviour of multiferroic (ferromagnetic+ ferroelectric+ ferroelastic) $Pb(Fe_{0.5}Nb_{0.5})O_3$ perovskite*
[Journal of Physics: Condensed Matter 27, 285901 \(2015\)](#)
M. A. Carpenter, J. A. Schiemer, I. Lascu, R. J. Harrison, A. Kumar, R. S. Katiyar, N. Ortega, D. A. Sanchez, C. Salazar Mejia, W. Schnelle, M. Echizen, H. Shinohara, A. J. F. Heap, R. Nagaratnam, S. E. Dutton, J. F. Scott
26. *Raman study of magnetic excitations and magnetoelastic coupling in α - $SrCr_2O_4$*
[Physical Review B, 91 144411 \(2015\)](#)
M. E. Valentine, S. Koochpayeh, M. Mourigal, T. M. McQueen, C. Broholm, N. Drichko, S. E. Dutton, R. J. Cava, T. Birol, H. Das, C. J. Fennie
25. *Theory and Practice: Bulk Synthesis of C_3B and its H_2 - and Li-Storage Capacity*
[Angewandte Chemie, 54 1 \(2015\)](#)
T. C. King, P. D. Matthews, H. Glass, J. A. Cormack, J. P. Holgado, M. Leskes, J. M. Griffin, O. A. Scherman, P. D. Barker, C. P. Grey, S. E. Dutton, R. M. Lambert, G. Tustin, A. Alavi, D. S. Wright
24. *Effects of stoichiometric doping in superconducting Bi-OS compounds*
[Journal of Physics: Condensed Matter 27, 135501 \(2015\)](#)
C. Morice, E. Artacho, S. E. Dutton, D. Molnar, H-J. Kim, S. S. Saxena

2014

23. *Preparation of Single-Phase Films of $CH_3NH_3Pb(I_{1-x}Br_x)_3$ with Sharp Optical Band Edges*
[Journal of Physical Chemistry Letters 5, 2501 \(2014\)](#)
A. Sadhanala, F. Deschler, T. H. Thomas, S. E. Dutton, K. C. Goedel, F. C. Hanusch, M. L. Lai, U. Steiner, T. Bein, P. Docampo, D. Cahen, R. H. Friend
22. *Enhancement of the magnetocaloric effect driven by changes in the crystal structure of Al doped GGG, $Gd_3Ga_{5-x}Al_xO_{12}$ ($0 < x < 5$)*
[Journal of Physics: Condensed Matter 26, 116001 \(2014\)](#)
A. C. Sackville Hamilton, G. I. Lampronti, S. E. Rowley, S. E. Dutton

21. *Studies of the Room-Temperature Multiferroic $Pb(Fe_{0.5}Ta_{0.5})_{0.4}(Zr_{0.53}Ti_{0.47})_{0.6}O_3$: Resonant Ultrasound Spectroscopy, Dielectric, and Magnetic Phenomena*
[Advanced Functional Materials, 24, 2993 \(2014\)](#)
J. Schiemer, M. A. Carpenter, D. M. Evans, J. M. Gregg, A. Schilling, M. Arredondo, M. Alexe, D. Sanchez, N. Ortega, R. S. Katiyar, M. Echizen, E. Colliver, S. E. Dutton, J. F. Scott

2013

20. *Optical floating zone crystal growth and magnetic properties of $MgCr_2O_4$*
[Journal of Crystal Growth 39, 384 \(2013\)](#)
S. M. Koochpayeh, J.-J. Wen, M. Mourigal, S. E. Dutton, R. J. Cava, C. L. Broholm, T. M. McQueen
19. *Spin-flop and antiferromagnetic phases of the ferromagnetic half-twist ladder compounds $Ba_3Cu_3In_4O_{12}$ and $Ba_3Cu_3Sc_4O_{12}$*
[Journal of Physics: Condensed Matter 25, 136004 \(2013\)](#)
M. Kumar, S. E. Dutton, R. J. Cava, Z. G. Soos
18. *$Li_{11}Nd_{18}Fe_5O_{39.8}$ Revisited*
[Inorganic Chemistry 52, 950 \(2013\)](#)
P. D. Battle, S. E. Dutton, F. Grandjean, G. J. Long, K. Oh-ishi

2012

17. *Quantum spin liquid in frustrated one dimensional $LiCuSbO_4$*
[Physical Review Letters 108, 187206 \(2012\)](#)
S. E. Dutton, M. Kumar, M. Mourigal, Z. G. Soos, J.-J. Wen, C. L. Broholm, N. H. Andersen, Q. Huang, M. Zbiri, R. Toft-Petersen, R. J. Cava
16. *Dominant ferromagnetism in the spin-1/2 half-twist ladder 334 compounds, $Ba_3Cu_3In_4O_{12}$ and $Ba_3Cu_3Sc_4O_{12}$*
[Journal of Physics: Condensed Matter 24, 166001 \(2012\)](#)
S. E. Dutton, M. Kumar, Z. G. Soos, C. L. Broholm, R. J. Cava
15. *Low temperature synthesis of LnOF rare-earth oxyfluorides through reaction of the oxides with PTFE*
[Materials Research Bulletin, 47, 714 \(2012\)](#)
S. E. Dutton, D. Hirai, R. J. Cava

2011

14. *Magnetic properties of hole-doped SCGO, $SrCr_8Ga_{4-x}M_xO_{19}$ ($M = Zn, Mg, Cu$).*
[Journal of Physics: Condensed Matter, 23, 286001 \(2011\)](#)
S. E. Dutton, E. D. Hanson, C. L. Broholm, J. S. Slusky, R. J. Cava
13. *Structural and magnetic properties of $Nd_{18}Li_8Co_{4-x}Fe_xO_{39-y}$ and $Nd_{18}Li_8Co_{4-x}Ti_xO_{39-y}$*
[Journal of Solid State Chemistry, 184, 2580 \(2011\)](#)
P. D. Battle, S. E. Dutton, F. Grandjean, G. J. Long, N. Thammajak, S. Wisetsuwannaphum

12. *Helical magnetism and structural anomalies in triangular lattice α -SrCr₂O₄*
[Journal of Physics: Condensed Matter, 23, 246005 \(2011\)](#)
S. E. Dutton, E. Climent-Pascual, P. W. Stephens, J. P. Hodges, A. Huq, C. L. Broholm, R. J. Cava
11. *The sensitivity of the magnetic properties of the ZnCr₂O₄ and MgCr₂O₄ spinels to non-stoichiometry*
[Physical Review B 83, 064417 \(2011\)](#)
S. E. Dutton, Q. Huang, O. Tchernyshyov, C. L. Broholm, R. J. Cava
10. *NaIrO₃ - a pentavalent post-perovskite*
[Journal of Solid State Chemistry 184, 601 \(2011\)](#)
M. Bremholm, S. E. Dutton, P. W. Stephens, R. J. Cava

2010

9. *Divergent effects of static disorder and hole doping in geometrically frustrated β -CaCr₂O₄*
[Journal of Solid State Chemistry 183, 1798 \(2010\)](#)
S. E. Dutton, C. L. Broholm, R. J. Cava
8. *Superconductivity at 2.3 K in the misfit compound (PbSe)_{1.16}(TiSe₂)₂*
[Physical Review B, 82, 024503 \(2010\)](#)
N. Giang, Q. Xu, Y. S. Hor, A. J. Williams, S. E. Dutton, H. W. Zandbergen, R. J. Cava
7. *Synthesis and structural chemistry of La₁₈Li₈Rh₄MO₃₉ (M=Ti, Mn, Ru)*
[Journal of Solid State Chemistry 183, 162 \(2010\)](#)
P. D. Battle, S. E. Dutton, P. A. van Daesdonk
6. *Structural chemistry and magnetic properties of Ln₁₈Li₈Rh_{5-x}Fe_xO₃₉ (Ln = La, Nd)*
[Inorganic Chemistry 49, 5912 \(2010\)](#)
P. D. Battle, S. E. Dutton, N. Thammajak, F. Grandjean, M. T. Sougrati, G. J. Long, K. Oh-ishi, S. Nakanishi

2009

5. *Structural and magnetic properties of Pr₁₈Li₈Fe_{5-x}M_xO₃₉ (M = Ru, Mn, Co)*
[Journal of Solid State Chemistry 182, 1638 \(2009\)](#)
S. E. Dutton, P. D. Battle, F. Granjean, G. J. Long, M. T. Sougrati, P. A. van Daesdonk, E. Winstone
4. *Use of in situ neutron diffraction to monitor high-temperature, solid/H₂-gas reactions*
[Chemical Communications, 18, 2556 \(2009\)](#)
F. Tonus, M. Bahout, P. F. Henry, S. E. Dutton, T. Roisnel, P. D. Battle
3. *Structural chemistry and magnetic properties of Nd₁₈Li₈Fe_{5-x}M_xO₃₉ (M = Mn, Co)*
[Inorganic Chemistry, 48, 1613 \(2009\)](#)
S. E. Dutton, P. D. Battle, F. Granjean, G. J. Long, P. A. van Daesdonk

2. *Structural chemistry and magnetic properties of $Nd_{18}Li_8Fe_5O_{39}$ and $Nd_{18}Li_8Co_4O_{39}$: the interplay of cation and spin ordering*
[*Inorganic Chemistry*, 47, 11212 \(2009\)](#)
S. E. Dutton, P. D. Battle, F. Granjean, G. J. Long, K. Oh-Ishi

2008

1. *Structural chemistry and magnetic properties of $Pr_{3-x}Sr_{1+x}CrNiO_8$*
[*Journal of Solid State Chemistry*, 181, 2217 \(2008\)](#)
S. E. Dutton, M. Bahout, P. D. Battle, F. Tonus, V. Demange