

# Curriculum Vitae of Prof. A. P. Mackenzie

**Name:** Andrew Peter Mackenzie

**Date of Birth:** 7.3.64

**Nationality:** British

**Present Positions:** Professor of Condensed Matter Physics,  
School of Physics and Astronomy,  
University of St. Andrews,  
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Germany

**Education:** University of Edinburgh (1982-86): BSc (1st class Hons.) in Physics.  
University of Cambridge (1987-91): PhD in Physics.

## **Prizes, Bursaries and Fellowships:**

1984-86 University of Edinburgh: Mackay Smith Bursary, two departmental prizes and the Class Medals of 1985 and 1986.

1991 The Charles and Katherine Darwin Research Fellowship, Darwin College, Cambridge.

1993 Royal Society University Research Fellowship.

1999 Mott Lecturer at the Condensed Matter and Materials Physics conference of the UK Institute of Physics.

2001 Fellow of the Institute of Physics.

2004 Fellow of the Royal Society of Edinburgh.

2004 Daiwa-Adrian Prize for collaborative UK-Japanese research achievement.

2007 Ehrenfest Lecturer, Leiden, Netherlands

2008 Foreign Associateship, Canadian Institute for Advanced Research.

2011 Royal Society-Wolfson Research Merit Award

2011 Mott Medal and Prize of the UK Institute of Physics

2012 Fellow of the American Physical Society

2015 Fellow of the Royal Society

## **Editorship**

2003-12 Reviewing Editor for Science Magazine

## Visiting Scholar / Professorships

- 1995 Centro Atómico de Bariloche, Argentina
- 2003 Stanford University, USA
- 2004 Kyoto University, Japan
- 2006 Cornell University, USA
- 2009 National Institute for Material Science, Tsukuba, Japan  
Salerno University, Italy
- 2010 Stanford University

## Research Experience:

- 1985 Vacation studentship at CERN, Geneva, working on muon chamber group for "L3" experiment under Professor U. Becker (MIT).
- 1986-7 One year contract at CERN to continue research on L3 experiment.
- 1987-91 PhD entitled 'The role of stoichiometry in high temperature superconductivity' under the supervision of Prof. G. G. Lonzarich FRS.
- 1991-93 Research Associate at the IRC in Superconductivity, University of Cambridge.
- 1993-97 Royal Society University Research Fellow at the IRC in Superconductivity.
- 1997-2001 Royal Society University Research Fellow and Honorary Reader in Condensed Matter Physics at the University of Birmingham.
- 2001- Professor of Condensed Matter Physics at the University of St. Andrews.
- 2012- Director, Max Planck Institute for Chemical Physics of Solids, Dresden, Germany

## Research Grants as Principal Investigator:

- 1997-9 *Anisotropic oxide metals in the  $T \rightarrow 0$  limit* with Dr. S.R. Julian (University of Cambridge): EPSRC £98K.
- 1997-8 Royal Society Small Equipment Grant for variable temperature insert: £10K.
- 1997-8 *Effect of disorder, temperature and anisotropy on the metallic state in layered perovskite oxides*. EPSRC £50K.
- 1999-2002 *Ruthenates: An unprecedented opportunity to understand the physics of strongly correlated electrons*, with Dr. S.R. Julian (University of Cambridge): £185K from EPSRC.
- 2000-2006 *Science and technology of strongly correlated electrons in oxides*. Programme grant for £350K from the Leverhulme Trust. Co-applicants Drs. A.J. Schofield and S.R. Julian, and Profs. C.E. Gough and P.P. Edwards (Universities of Birmingham and Cambridge).
- 2002-2005 *Novel quantum order in ultra-pure ruthenates*, with Dr. S.R. Julian (University of Cambridge): £250K from EPSRC.
- 2002-2005 *Quantum criticality and novel quantum order in correlated electron systems*, with Dr. S.R. Julian (University of Cambridge): Equipment grant of £252K from EPSRC and industrial collaborator Cambridge Magnetic Refrigeration Ltd.

2003–2006 *Helium liquefier for University of St. Andrews* £582K from SRIF2 / University of St. Andrews.

2004-2009 *EPSRC Portfolio Partnership on Novel Quantum Order in Strongly Interacting Electron Metals* Total award £3.2M between 6 PI's from Bristol, Cambridge & St Andrews. Personal share £740K

2006 *Leverhulme Study Abroad Fellowship* to support sabbatical visits to Cornell, Stanford & Kyoto Universities. £17K

2008-2012 *Sr<sub>3</sub>Ru<sub>2</sub>O<sub>7</sub>: Quantum Nematic Fluid, Vector Magnetic Field Tuning and Spectroscopic Imaging Scanning Tunneling Microscopy*, with Prof J.C. Davis (St Andrews and Cornell). £1.3M from EPSRC.

2009-2018 *The Scottish Doctoral Training Centre in Condensed Matter Physics*, with Dr. C.A. Hooley (St Andrews), Profs M.E. Cates and A.D. Huxley (Edinburgh) and Prof R.J. Warburton (Heriot Watt). £6.7M from EPSRC.

2009-12 *Novel Quantum Order in Correlated Oxides*, with N.E. Hussey, S.M. Hayden. & N.S. Shannon (University of Bristol). £105K from EPSRC for collaborative UK-Japanese research with H. Takagi (University of Tokyo) & Y. Maeno (Kyoto University).

2011-17 *Topological Protection and Non-Equilibrium States in Strongly Correlated Electron Systems* EPSRC Programme Grant of £6.8M. I am PI; co-I's F. Baumberger, J.C. Davis, A.G. Green, C.A. Hooley, J.M.J. Keeling (St Andrews), A.D. Huxley (Edinburgh) & S.H. Simon (Oxford)

### **Service and positions of responsibility**

2001-4 Research Policy Advisory Committee, Scottish Higher Education Funding Council

2002-5 Physics Strategic Advisory Team, EPSRC

2001-3 UK Institute of Physics Superconductivity Group Committee

2002 - EPSRC Peer Review College

2003-12 Director of Research and Deputy Head, School of Physics & Astronomy, University of St Andrews

2005-8 Leader, Condensed Matter and Materials Physics Theme, Scottish Universities Physics Alliance

2005-6 Chair, 2020 Science Strategy Working Group, University of St Andrews

2008-11 Royal Society International Exchanges Committee  
University Court, University of St Andrews  
Director, Scottish Doctoral Training Centre in Condensed Matter Physics

2010 Technical Opportunities Panel, EPSRC

2011- Network of Advisors, EPSRC  
Director, EPSRC Programme 'Topological Protection and Non-Equilibrium States in Strongly Correlated Electron Systems'  
Advisory Board, South East Physics Network

2013- Advisory Board, Shanghai Centre for Complex Physics  
Advisory Board, Quantum Materials Programme of the Canadian Institute for Advanced Research

### **Invited conference presentations since 1993:**

- 1993 *Metal and Oxide Superconductors Conference*, Eugene, USA.  
*Condensed Matter and Materials Physics Conference*, Leeds, UK.
- 1994 *Materials and Mechanisms of Superconductivity IV*, Grenoble, France.  
*Royal Society of Chemistry Symposium*, Aberdeen, UK.
- 1995 *Physical Phenomena at High Magnetic Fields II*, Tallahassee, USA.  
*International Symposium on Frontiers of High  $T_c$  Superconductivity*, Morioka, Japan.  
*8th International Symposium on Superconductivity*, Hamamatsu, Japan.
- 1996 *Inaugural meeting of UK Superconductivity Forum*, London, UK.  
*Institute of Physics Low Temperature Group Conference*, Nottingham, UK.  
*Condensed Matter and Material Physics Conference*, York, UK.
- 1997 *Gordon Conference on Superconductivity*, Ventura, USA.  
*American Physical Society March Meeting*, Kansas City, Missouri, USA.  
*Oxide Functional Materials*, London, UK.  
*Mercury and Thallium Based Superconductors*, Cambridge.  
*Strongly Correlated Electron Systems IX*, Trieste, Italy.  
*Workshop on the Physics of Ruthenates and Manganites*, Tallahassee, USA.  
*Condensed Matter and Material Physics Conference*, Exeter, UK.
- 1998 *Strongly Correlated Electron Systems X*, Trieste, Italy.  
*Euroconference on Magnetism Today*, Evora, Portugal.  
*EPSRC Theoretical Physics Summer School*, Ambleside, UK.  
*Workshop on Low Dimensional Superconductors*, Kyoto, Japan.  
*Condensed Matter and Material Physics Conference*, Manchester, UK.
- 1999 *Pairing mechanisms and symmetry in superfluid He-3 and unusual Superconductors*, Cambridge, UK.  
*Institute of Physics Superconductivity Group Conference*, Birmingham, UK.  
*Physics and Chemistry of Novel Materials: Strongly Correlated Electron Systems*, Ascona, Switzerland.  
*22nd International Conference on Low Temperature Physics*, Helsinki, Finland (plenary lecture).  
*Condensed Matter and Material Physics Conference*, Leicester, UK (Mott Lecture).
- 2000 *Gordon Conference on Superconductivity*, Ventura, USA.  
*JRCAT Workshop on Electronic Phase Separation*, Nara, Japan.  
*Gordon Conference on Strongly Correlated Systems*, New Hampshire, USA.  
*Strongly Correlated Electron Systems XII*, Trieste, Italy.  
*High Temperature Superconductivity*, Santa Barbara, USA.

- Trends in Condensed Matter Physics*, Ascona, Switzerland.  
*Superconductivity of d- and f-electron metals*, Dresden, Germany
- 2001 *German Physical Society*, Hamburg, Germany.  
*National Seminar for Solid State Physics*, Groningen, Netherlands.  
*Magnetic Correlations, Metal-Insulator transitions and Superconductivity in Novel Materials*, Dresden, Germany.  
*Physical Phenomena at High Magnetic Fields V*, Santa Fe, New Mexico (talk given by Dr. S. Grigera).  
*Ruthenates and rutheno-cuprates: theory and experiments*, Naples, Italy.  
*VIII International Workshop on Vortex Physics*, Bariloche, Argentina
- 2002 *American Physical Society*, Indianapolis, USA  
*International Workshop on Non-Fermi Liquid Physics in Transition Metal and Rare Earth Compounds*, Bled, Slovenia  
*Emergent Materials and Highly Correlated Electrons*, Trieste, Italy.  
*BA Festival of Science*, Leicester, UK
- 2003 *Joint Magnetism Workshop*, Glasgow  
*Magnetic Model Systems*, Oxford  
*ICAM New York Workshop on Quantum Criticality*, New York, USA (talk given by Dr. S. Grigera).  
*NEDO Florida Workshop on Novel Superconductivity and Magnetism*, Key West, Florida, USA (talk given by Dr. S. Grigera).  
*Frontiers in High-Field Physics*, Los Alamos, USA
- 2004 *Gordon Research Conference on Strongly Correlated Systems*, Massachusetts, USA  
*Quantum Fluids and Solids 2004*, Trento, Italy  
*European Physical Society* Prague, Czech Republic  
*Quantum Phase Transitions*, Bad Honnef, Germany  
*Spin-Triplet Superconductivity and Ruthenate Physics*, Kyoto, Japan
- 2005 *Kavli Institute for Theoretical Physics Workshop on Quantum Criticality*, Santa Barbara, USA  
*St Andrews Workshop on Strongly Correlated Electrons & Complexity*, St Andrews  
*Physics 2005, a century after Einstein*, Warwick, UK  
*Strongly Correlated Electron Systems 05*, Vienna, Austria  
*Strongly Correlated Electron Materials: Physics And Nanoengineering*, San Diego, USA  
*24<sup>th</sup> International Conference on Low Temperature Physics*, Orlando, USA  
*Functional Transition Metal Compounds & Multiferroics*, Cologne, Germany  
*International Network for Young Scientists: Intermetallics, Superconductors and Quantum Fluids at Low Temperatures*. Stara Lesna, Slovakia

- 2006 *Quantum Materials*, Korean Institute for Advanced Study, Seoul, Korea  
*Frontiers in Correlated Matter: Designing Emergent Matter: A Fresh Start?* Snowmass, USA  
*US Department of Energy Workshop: Basic Research Needs for Superconductivity* Washington DC, USA  
*Theoretical & Experimental Magnetism*, Oxford, UK  
*Quantum Materials*, Canadian Institute for Advanced Research, Vancouver, Canada
- 2007 *BCS@50 (Celebration of the 50<sup>th</sup> anniversary of publication of the Bardeen-Cooper-Schrieffer theory of superconductivity)* Urbana, USA  
*A.I. Larkin Memorial Conference* Chernogolovka, Russia  
*UK-Japan Expert Workshop on Advanced Materials* Tokyo  
*Canadian Institute for Advanced Research Workshop on Advanced Materials*, Montreal, Canada.  
*The Heavy Fermion Frontier*, Los Alamos, New Mexico  
*Kavli Institute for Theoretical Physics Workshop on Sr<sub>2</sub>RuO<sub>4</sub> and p+ip superconductivity*, Santa Barbara, California.
- 2008 *Berkeley Mini-Statistical Mechanics Meeting*, Berkeley, California  
*American Physical Society March Meeting*, New Orleans, Louisiana  
*Unconventional Phases and Phase Transitions in Strongly Correlated Electron Systems* Dresden, Germany  
*Interplay between Superconductivity and Magnetism at the Nanometer Scale*, European Science Foundation Exploratory Workshop, Salerno, Italy  
*International Workshop on Competing Orders, Pairing Fluctuations, and Spin-Orbit Effects in Novel Unconventional Superconductors*, Dresden, Germany  
*Grand Challenges in Strong Correlations in Condensed Matter*, STFC Exploratory Workshop, Manchester, UK  
*Emergent Behaviour in Heavy Electron Materials*, Aspen, USA  
*Pacific Institute of Theoretical Physics Workshop: Quantum Criticality*, Toronto, Canada  
*Canadian Institute for Advanced Research Quantum Materials Workshop*, Vancouver, Canada
- 2009 *20<sup>th</sup> Anniversary Edgar Lüscher Seminar*, Klosters, Switzerland  
*AIST-RIKEN Joint Workshop: Emergent Phenomena in Strongly Correlated Electron Materials*, Okinawa, Japan  
*Quantum Criticality and Novel Phase Formation*, Dresden, Germany (Plenary Lecture)  
*New Computational Methods in Quantum Many-body Theory*, Leiden, Netherlands  
*Superconductors by the Mediterranean Sea: Classic and Novel Materials, Electronic States and Critical Properties*, Alghero, Italy  
*Novel Spin Pairing 2009*, Kyoto, Japan  
*Novel Quantum Matter in Correlated Oxides*, Kyoto, Japan

- 2009 *Hangzhou Workshop on Quantum Matter*, Hangzhou, China (declined)  
*Fermions 2009*, Salzburg, Austria (Plenary Lecture)  
*Canadian Institute for Advanced Research Fall Meeting*, Montreal, Canada
- 2010 *Sr<sub>2</sub>RuO<sub>4</sub> Mini-Workshop*, Max Planck Institute Stuttgart  
*Theoretical Institute of Photon Science Workshop*, Stanford, California  
*American Physical Society March Meeting*, Portland, Oregon  
*Spectroscopy of Novel Superconductors*, Shanghai, China  
*Strongly Correlated Electron Systems 2010*, Santa Fe, New Mexico (Plenary Lecture)  
*Principles and Design of Strongly Correlated Electronic Systems*, Trieste, Italy  
*Kavli International Seminar 'The Next Ten Years of Correlated Quantum Matter'*, Kavli Institute, UK  
*Emergent Quantum States in Complex Correlated Matter*, Dresden, Germany  
*New Developments in Quantum Field Theory & Condensed Matter Physics*, Stanford, California
- 2011 *Korea-UK Workshop on Strongly Correlated Electron Systems*, Seoul, Korea  
*Canadian Institute for Advanced Research Cross-Programme Discussion Workshop*, Whistler, Canada  
*Black Hole Answers for Condensed Matter Questions* Leiden, Netherlands  
*Physics by the Lake St Bees*, UK  
*Superconductivity 100 Years Later: A Computational Approach* Sardinia, Italy  
*Holographic Duality and Condensed Matter Physics* Santa Barbara, USA  
*Condensed Matter and Materials Physics 2011*, Manchester, UK (plenary)
- 2012 *UK-Japan Workshop on Strongly Correlated Electron Systems*, Tokyo, Japan  
*Multifunctional Materials and Nanoscale Phenomena*, Vietri sul Mare, Italy  
*Gravity, Black Holes and Condensed Matter*, Chicheley Hall, UK  
*Itinerant Spin-Orbit Systems: From Magnetic Frustration to Novel Superconductivity*, Dresden, Germany  
*Gordon Research Conference on Strongly Correlated Systems*, Mount Holyoke, USA  
*Spin-Orbit Physics 2012*, Aspen, USA
- 2013 *Topological Quantum Matter, Strongly Correlated Electrons, and Quantum Information*, Shanghai, China  
*Quantum Phase Transitions, Experiment and Theory*, Lauterbad, Germany  
*Topology, Correlations and Interfaces in Correlated Electron Systems*, Paris, France  
*UBC-Max Planck Centre Conference*, Stuttgart, Germany
- 2014 *Beyond quasiparticles: New paradigms for quantum fluids*, Aspen, USA  
*50<sup>th</sup> Karpacz Winter School on Condensed Matter Physics*, Karpacz, Poland  
*Overarching Issues in the Theory of Highly Correlated Electron Fluids*, Stanford, USA

- Itinerant Magnetism and Superconductivity - IMS 2014*, Dresden, Germany  
 27<sup>th</sup> *International Conference on Low Temperature Physics*, Buenos Aires, Argentina (plenary)  
*Quantum Field Theory, String Theory and Condensed Matter Physics*, Chania, Greece
- 2015 *Frontiers in Unconventional Superconductivity and Magnetism*, Bristol, UK  
*German Physical Society*, Berlin, Germany  
*Chemistry Meets Physics*, Ringberg, Germany  
*Concepts and Discovery in Quantum Matter*, Cambridge, UK  
*Theoretical and Experimental Magnetism 2015*, Oxford, UK  
 11<sup>th</sup> *International Conference on Materials and Mechanisms of Superconductivity*, Geneva, Switzerland  
*High-temperature Superconductivity and Correlated Electrons*, Ringberg, Germany.
- 2016 *Canadian Institute for Advanced Research Spring Meeting*, Toronto, Canada  
*Strong Correlations and the Normal State of the High Temperature Superconductors*, Dresden, Germany  
*Graduierten Kolleg Workshop*, Meissen, Germany  
*Superstripes 2016*, Ischia, Italy  
*Quantum Criticality and Topology in Itinerant Electron Systems*, Albuquerque, USA  
*Low Energy Challenges for High Energy Physicists II*, Waterloo, Canada  
*DPG School in Physics*, Bad Honnef, Germany  
*TopoMat 2016*, Stuttgart, Germany  
*European Materials Research Society*, Warsaw, Poland  
*Frontiers in Physical Sciences*, Buenos Aires, Argentina

**Invited Seminars and colloquia:**

- 1992 Ecole Federale Polytechnique de Lausanne, Switzerland.  
 1993 Imperial College of Science and Technology, UK.  
 Centre d'Energie Atomique, Grenoble, France.  
 Naval Research Laboratory, Washington DC, USA.
- 1994 University of Leeds, UK.  
 Naval Research Laboratory, Washington, USA.  
 John Hopkins University, Baltimore, USA.  
 University of Virginia, USA.  
 AT&T Bell Laboratories, USA.  
 Princeton University, USA.
- 1995 University of Bristol, UK.  
 National High Field Laboratory, Tallahassee, USA.  
 University of Birmingham, UK.  
 AT&T Bell Laboratories, USA.  
 Centro Atómico de Bariloche, Argentina.
- 1996 University of St. Andrews, UK.  
 University of Edinburgh, UK.



- Imperial College of Science and Technology, UK.
- Kyoto University, Japan.
- Hiroshima University, Japan.
- Osaka University, Japan.
- Institute for Solid State Physics, University of Tokyo, Japan.
- Central Research Institute of the Electric Power Industry, Tokyo, Japan.
- 1997 Cavendish Laboratory, Cambridge, UK.
- University of Birmingham, UK.
- University of Bristol, UK.
- 1998 Massachusetts Institute of Technology, USA.
- Cavendish Laboratory, Cambridge, UK.
- University of Warwick, UK.
- Imperial College, London, UK.
- Brookhaven National Laboratory, USA.
- Université de Paris Sud, France.
- University of Oxford, UK.
- University of Southampton, UK.
- 1999 University of Manchester, UK.
- University of Lancaster, UK.
- University of Cambridge, UK.
- 2000 University of Sheffield, UK.
- Kyoto University, Japan.
- University of St. Andrews, UK.
- University of Wales at Swansea, UK.
- 2001 University of Cambridge, UK
- University of Delft, Netherlands
- Heriot-Watt University, UK
- University of Oxford, UK
- 2002 University of Birmingham, UK
- Toronto University, Canada
- University of California, Berkeley, USA
- 2003 University of Bristol, UK
- Stanford University, Stanford, USA (departmental colloquium and group seminar)
- University of California, Los Angeles, USA
- University of California, Berkeley, USA
- University of British Columbia, Canada
- Simon Fraser University, Canada
- 2004 Johnson Matthey Research, UK
- Edinburgh University, UK
- Birmingham University, UK
- Kyoto University, Japan
- 2005 ESPCI, Paris, France
- Nottingham University, UK
- Royal Holloway, UK
- 2006 Lancaster University, UK
- Cornell University, USA

- Toronto University, Canada
- Boston University, USA
- Harvard University, USA
- Yale University, USA
- 2007 University of Illinois, USA
- Stanford University, USA
- IBM Almaden Research Centre, USA
- Columbia University, USA
- Kyoto University, Japan
- RIKEN, Tokyo, Japan
- Durham University, UK
- Princeton University, USA
- 2008 Harvard University, USA
- 2009 Stanford University, USA
- National Institute for Material Science, Tsukuba, Japan
- Salerno University, Italy
- Lawrence Berkeley National Laboratory, USA
- 2010 Cornell University, USA (seminar & colloquium)
- University of California at Irvine, USA
- University of California San Diego, USA
- Max-Planck Institute for Solid State Physics, Stuttgart, Germany
- University of California Berkeley, USA
- 2011 Stanford University, USA (seminar & colloquium)
- California Institute of Technology, USA
- University of California at Irvine, USA
- ETH Zurich, Switzerland
- Manchester University, UK
- 2012 Max Planck Institute for Solid State Physics, Stuttgart, Germany
- Max Planck Institute for Chemical Physics, Dresden, Germany
- Stanford University, USA
- Institute of Physics, Manchester, UK
- Cornell University, USA
- 2013 University of Leeds, UK
- Loughborough University, UK
- Leipzig University, Germany
- McMaster University, Canada
- University of Toronto, Canada
- 2014 Frankfurt University, Germany
- Universidad Nacional de La Plata, Argentina
- Universidad Autónoma de Madrid, Spain
- 2015 University of Stuttgart, Germany
- University of St Andrews, UK
- University of York, UK
- 2016 University of Strathclyde, UK
- Stanford University, USA
- Massachusetts Institute of Technology, USA

AlbaNova Colloquium, Stockholm, Sweden  
Princeton University, USA  
University of Würzburg, Germany

### Conference organisation / chairing

- 1995 *Physical Phenomena at High Magnetic Fields II*, Tallahassee, USA.
- 2000 *JRCAT Workshop on Electronic Phase Separation*, Nara, Japan.  
*Strongly Correlated Electron Systems XII*, Trieste, Italy..  
*Condensed Matter and Materials Physics*, Bristol, UK.
- 2001 *Gordon Research Conference on Superconductivity*, Oxford, UK.
- 2002 *CMMP-EPS*, Brighton, UK.
- 2003 *St. Andrews Workshop on Correlated Electrons and Complexity*, St. Andrews, UK  
*Magnetism and Superconductivity*, Manchester, UK.
- 2004 *St. Andrews Workshop on Correlated Electrons and Complexity*, St. Andrews, UK  
*Spectroscopies of Novel Superconductors*, Spain  
*Gordon Research Conference on Superconductivity*, Oxford, UK  
*Spin-Triplet Superconductivity and Ruthenate Physics*, Kyoto, Japan
- 2005 *St. Andrews Workshop on Correlated Electrons and Complexity*, St. Andrews, UK  
*Physical Phenomena at High Magnetic Fields V*, Tallahassee, USA
- 2006 *American Physical Society March Meeting*, Baltimore, USA  
*Gordon Research Conference on Strongly Correlated Systems*, Mount Holyoke, USA
- 2007 *Exploring Quantum Matter: Visions and Opportunities*, St Andrews, UK  
*UK-Japan 8+8 Workshop*, Edinburgh, UK
- 2008 *Physical Phenomena at High Magnetic Fields VI*, Tallin, Estonia  
*25<sup>th</sup> International Conference on Low Temperature Physics*, Amsterdam, Holland  
*Ultra-Low Temperatures 2008*, Royal Holloway, University of London  
*Interplay between Superconductivity and Magnetism at the Nanometer Scale*, European Science Foundation Exploratory Workshop, Salerno, Italy
- 2009 *AIST-RIKEN Joint Workshop: Emergent Phenomena in Strongly Correlated Electron Materials*, Okinawa, Japan  
*Novel Spin Paring 2009*, Kyoto, Japan  
*Quantum Criticality and Novel Phase Formation*, Dresden, Germany
- 2010 *Strongly Correlated Electron Systems 2010*, Santa Fe, New Mexico  
*Novel Correlated Materials*, KITP Santa Barbara, USA  
*Kavli International Seminar*, Kavli Institute, UK
- 2011 *Strongly Correlated Electron Systems 2011*, Cambridge, UK  
*26th International Conference on Low Temperature Physics*, Beijing, China  
*MAMA Framework 7 Workshop*, Salerno, Italy
- 2013 *Strongly Correlated Electron Systems 2013*, Tokyo, Japan
- 2014 *27th International Conference on Low Temperature Physics*, Buenos Aires, Argentina  
*Advanced Topics in Magnetism and Superconductivity*, Bariloche, Argentina  
*Strongly Correlated Electron Systems 2014*, Grenoble, France

*OIST International Workshop on Novel Quantum Materials  
and Phases, Okinawa, Japan.*

**Senior Academic Visitors Hosted**

- 2001 Y. Maeno (Kyoto – 14 days)  
2002 A.J. Millis (Rutgers – 4 days)  
2003 G. Aeppli (UCL – 3 days)  
Y. Maeno (Kyoto – 7 days)  
M. Braden (Cologne – 7 days)  
G.G. Lonzarich (Cambridge – 7 days)  
2004 J. Orenstein (Berkeley – 5 days)  
K. Ishida (Kyoto – 7 days)  
T.M. Rice (Zurich – 7 days)  
J.C. Davis (Cornell – 7 days)  
Z.X. Shen (Stanford – 7 days)  
P. Gegenwart (MPI Dresden – 8 months)  
S. Simon (Bell-Lucent – 7 days)  
I.R. Fisher (Stanford – 7 days)  
N Ru (Stanford – 7 days)  
2005 Z.X. Shen (Stanford – 7 days)  
W. Hanke (Wurzburg – 7 days)  
H. Yaguchi (Kyoto – 7 days)  
F. Baumberger (Stanford – 7 days)  
G.G. Lonzarich (Cambridge – 7 days)  
N.P. Ong (Princeton – 7 days)  
2006 A. Damascelli (UBC – 2 days)  
M. Braden (Cologne - 2 days)

**PUBLICATIONS OF A.P. MACKENZIE**

1. *Characterisation and Transport Measurements on Single Crystals in the Bi-Sr-Cu-O System*,  
A.P. Mackenzie, E. Marseglia, I. Marsden, G. Lonzarich, C. Chen and B. Wanklyn, *Physica C* **162-164**, 1029 (1989).
2. *A Method to Overcome the Problem of Small Sample Tilts in Light Element Electron Microprobe Analysis*,  
A. P. Mackenzie, Proceedings of the XIIth International Conference on Electron Microscopy, Vol 2, p. 221 (pub. San Francisco Press) (1990).
3. *Growth and Characterisation of Co-doped  $YBa_2Cu_3O_{7-x}$  Single Crystals*,  
C.T. Lin, S.X. Li, W.Z. Zhou, A.P. Mackenzie and W.Y. Liang, *Physica C* **176**, 285 (1991).

4. *Transparent Conducting Thin Films: Precise Measurement of the Oxygen Content*, J.R. Bellingham, A.P. Mackenzie and W. A. Phillips, Appl. Phys. Lett. **58**, 2506 (1991).
5. *Accurate Metal and Oxygen Analyses of Cuprate Single Crystals by Electron Probe Microanalysis*, A.P. Mackenzie, Physica C **178**, 365 (1991).
6. *Temperature Dependence of Stoichiometry of Laser Ablated  $YBa_2Cu_3O_{7-x}$  Thin Films*, K. Scott, A.P. Mackenzie, W. Dineen and W. A. Phillips, Physica C **185-9**, 1983 (1991).
7. *Single Crystal Hall Effect and Stoichiometry in " $Bi_2Sr_2CuO_6$ "*, S.D. Hughes, A.P. Mackenzie, J.R. Cooper, A. Carrington and J.S. Edmonds, Physica C **185-9**, 1243 (1991).
8. *Low Temperature Hall Effect in  $Bi_2Sr_2CuO_{6-\delta}$* , A.P. Mackenzie, S.D. Hughes, J.R. Cooper, A. Carrington, C.Chen and B.M. Wanklyn, Phys. Rev. B **45**, 527 (1992).
9. *0.7 eV Excitation in  $YBa_2Cu_3O_{7-x}$ : Evidence from Single Crystal and Powder Samples*, H.L. Dewing, E.K.H. Salje, K. Scott and A.P. Mackenzie, J. Phys. C **4**, L109 (1992).
10. *The growth of Zn-doped YBCO single crystals*, C.T. Lin, S.X. Li, A.P. Mackenzie, W. Zhou, P.D. Hunneyball and W.Y. Liang, Physica C **193**, 129 (1992).
11. *Crystal Structure and Cation Stoichiometry of Superconducting  $Tl_2Ba_2CuO_{6+\delta}$  Single Crystals*, R.S. Liu, S.D. Hughes, R.J. Angel, T.P. Hackwell, A.P. Mackenzie and P.P. Edwards Physica C **198**, 203 (1992).
12. *The Variable Voltage Method for Calculating the Absorption Correction for Soft X-Rays*, A.P. Mackenzie, in 'X-Ray Optics and Microanalysis 1992' eds. P.B. Kenway et al, pub. IOP Press, p. 127 (1992).
13. *Temperature Dependence of the Hall Angle in  $YBa_2(Cu_{1-x}Co_x)_3O_{7-\delta}$* , A. Carrington, A.P. Mackenzie, C.T. Lin and J.R. Cooper, Phys. Rev. Lett. **69**, 2855 (1992).
14. *Recent Progress in Electron Probe Microanalysis*, A.P. Mackenzie, Rep. Prog. Phys. **56**, 557 (1993) (An invited review article of 25000 words).
15. *Resistive Upper Critical Field of  $Tl_2Ba_2CuO_6$  at Low Temperatures and High Magnetic Fields*, A.P. Mackenzie, S.R. Julian, G.G. Lonzarich, A. Carrington, S.D. Hughes, R.S. Liu and D.C. Sinclair, Phys. Rev. Lett. **71**, 1238 (1993).

16. *Hall Effect and Resistivity of Oxygen-Deficient  $YBa_2Cu_3O_{7-x}$  Thin Films*,  
A. Carrington, D.J.C. Walker, A.P. Mackenzie and J.R. Cooper, Phys.Rev. B **48**, 13051 (1993).
17. *Resistive Upper Critical Field of Single Crystals of  $Tl_2Ba_2CuO_6$* ,  
A.P. Mackenzie, S.R. Julian, G.G. Lonzarich, A. Carrington, S.D. Hughes, R.S. Liu and D.C. Sinclair, Journal of Superconductivity **7**, 271 (1994).
18. *The Field Dependence of the Resistive Transition in  $Tl_2Ba_2CuO_{6+\delta}$*   
A. Carrington, A.P. Mackenzie, D.C. Sinclair and J.R. Cooper, Phys. Rev. B **49**, 13243 (1994).
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