
Professor John Peter Brodholt

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EDUCATION

- **Ph.D.** Geology, **University of Bristol**, 1992.
“*Molecular Dynamics Simulations of Aqueous Solutions at High Pressures and Temperatures*”, supervisor Prof. Bernie Wood.
 - **M.S.** Geological Sciences, **Northwestern University**, 1988
 - **B.A.** Geology, **State University of New York at Buffalo**, 1985. Winner of the Pegrum Award.
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EMPLOYMENT

- **Professor of Mineral Physics**, Department of Earth Sciences, UCL. **2005-now**
 - **Reader in Mineral Physics**, Department of Geological Sciences, UCL. **2000-2005**.
 - **Royal Society University Research Fellow**, Geological Sciences, UCL. **1994-2002**.
 - **Post-Doctoral Research Fellow**. Istituto di Elettronica Quantistica, Florence, Italy **1993-1994**.
 - **N.E.R.C. Post-Doctoral Research Assistant**, Geology, University of Bristol, **1992-1993**.
 - **1974 to 1982** I held a variety of jobs including building-site labourer and factory worker.
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AWARDS and HONOURS

- **Mineralogical Society of Great Britain and Ireland Distinguished Lecturer**, 2012-2013
 - **Schlumberger Medal of the Mineralogical Society of Great Britain and Ireland**, 2009.
 - **Elected Fellow of the Mineralogical Society of America**, 2005.
 - **European Mineralogical Union Medal for Research Excellence**, 2002.
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OTHER APPOINTMENTS AND AFFILIATIONS

- **Editor, Earth and Planetary Science Letters** (2014-2020)
- **Member of Hong Kong 2014 RAE Physical Sciences Panel** (2013-2014)
- **Fellow of the Centre for Advanced Studies, Norwegian Academy of Sciences** (2010-2011)
Invited Visitor (April to July, 2011)
- **Committee Member of the British Geophysical Association** (2010-present)
- **NERC Pool of Chairs**, (2010-present)
Chaired five Standard Grant Panel Meetings
Chaired four Fellowship Panel Meetings
Peer Review Working Group (2012)
Co-Chair for Peer Review College Recruitment Panel – vetting applications and proposing new members (2012)
Research Quality Review Group (2010)

NERC Responsive Mode Working Group (2010)

- **Governor, Brookfield Primary School, London** (2010-present)
- **Editor, Geophysical Journal International** (2009-2013)
- **Advisory Board of Elements Magazine** (2009-2013)
- **External Examiner for University of Bristol Earth Sciences Degrees** (2008-2010)
- **HECTOR DCSE Grant Review Panel** (2007-present)
Reviewing and ranking applications for distributed computational support.
- **Chair of National HPC Science Advisory Committee** (2009-present)
Providing scientific and technical advice to UK Research Councils on UK's national High-Performance Computing services.
- **Member of Research Council of Norway Expert Committee** (2009)
Grant review and ranking of proposals.
- **Member of HECTOR Science Advisory Committee** (2007-2009)
- **Chair of the UCL RAE 2008 Staff Selection Review Committee** (2007)
Responsible for reviewing the cases of all UCL staff not selected for the RAE.
Responsible for reviewing the demographic makeup of UCL staff not selected.
- **Member of ESF Pool of Reviewers** (2006-2010)
- **Committee Member of NERC High Performance Computing Steering Committee** (2004-now)
Provide guidance to NERC on its High-Performance Computing strategy.
Review and allocation of applications for national HPC resources to NERC scientists.
- **IMA Commission on Physics of Minerals** (2005)
- **EPSRC HECToR Procurement Working Group** (2004-2007)
Responsible for drafting requirements for procurement of the UK's national HPC facility (~£120M).
- **Chair, Mineral Physics Group of the Mineralogical Society of Great Britain and Ireland** (03-07)
Responsible for promoting the aims of the Mineralogical Society, in particular Mineral Physics.
Organised meetings, agreed expenditure and allocation of small grants.
- **Advisory Board of Goldschmidt** (2004)
- **NERC Earth Science Peer Review College Member** (2003-2005)
Review grants and member of four Standard Grant panels.
- **NERC Earth Science Peer Review Committee Member** (2002-2003)
Member of old Peer Review Committee before introduction of Peer Review College.
- **Selection Panel Member, European Large-Scale Geochemical Facility (UK)** (2002-2003)
Review and select proposals for use of the European Large-Scale Geochemical Facility (UK).
- **Member of UCL Nursery Management Group** (2001 to 2008)
Responsible for the strategy and running of the UCL Day Nursery (~50 children).
- **Treasurer, Mineral Physics Group of the Mineralogical Society of Great Britain** (1996-2001)
- **Council Member of the Mineralogical Society** (1997-2000)
- **Treasurer of the U.C.L. Academic Staff Common Room** (1998-2002)
- **Warden, Connaught Hall (University of London Hall of Residence)** (1997-2009)
Responsible for pastoral care for ~220 students in a University of London hall of residence.

TEACHING

- **GEOL 1004 The Dynamic Earth** (1st year UGs).
- **GEOL 3037 Deep Earth and Planetary Modelling** (3rd year UGs)
- **First year field course** to South West England.
- **B169 Foundations of Physical Geoscience** (1st year UGs)
- **C365 Physics of Planetary Interiors** (3rd & 4th year UGs)
- **B172 Earth and Planetary Physics** (2nd year UGs)
- **Third year field course in Southern Spain.**

POSTDOCTORAL SUPERVISION

- **David Dobson**, (1996-1998) NERC funded. "The electrical conductivity of mantle minerals"
- **Tracy Chaplin** (1998-2001) NERC funded. "The effect of Aluminum on the properties of perovskite"
- **Duncan Harris** (1999-2001) NERC funded. "Simulations of aqueous solutions"
- **Dominic Fortes**, (2003) PPARC funded. "The properties of planetary forming ices"
- **Stephen Stackhouse** (2003-2006) NERC funded. "High-temperature elasticity of the lower mantle"
- **Paul Wilson** (2002-2003) NERC funded. "The development of a Condor pool (eScience)"
- **Maria Alfredsson** (2002-2007) NERC funded. "The properties of Fe-bearing minerals"
- **Alex Cote** (2005-2009) NERC funded. "Light elements in the core"
- **Peter Grindrod** (2006-2007) PPARC funded. "The evolution of Icy moons"
- **Ester Sola** (2007-2008) NERC funded. "QMC calculations on Fe"
- **Michael Amman** (2010-2012) NERC funded. "Thermal conductivity of lower mantle minerals"
- **Benjami Martorell Masip** (2011-now) NERC funded. "The properties of Ni in the Earth's core"
- **Paolo de Cono** (2012-now) NERC funded. "The properties of melts under high P&T"
- **Alex Lindsay-Scott** (2012-now) NERC funded. "Novel fluoride post-perovskites"
- **Joshua Muir** (2012-now) NERC funded. "The origin of ULVZs"

PH.D. STUDENT SUPERVISION

- **Nicola Richmond**, NERC funded (1996-2000).
- **Artem Oganov**, Graduate School Funded (1999-2002).
- **Dominic Fortes**, Graduate School Funded (2001-2004)
- **Pritchard Benjamin**, EPRC funded (2005-2008)
- **Simon Hunt**, NERC funded (2005- 2009)
- **Michael Ammann**, EU funded (2007-2010)
- **Richard McCormack**, EU funded (2007-2011)
- **Alex Lindsay-Scott**, NERC funded (2007-2011)

PUBLICATION SUMMARY

- ~140 Papers, 9 in Nature or Science, >3300 citations, h-index = 35 (WOS 2013)
- Full list can be found at <http://www.es.ucl.ac.uk/people/brodholt/papers.html>

INVITED TALKS (1996-2013)

- **University of Muenster, Dept. of Physics**. "D" – Caught between a rock and a hot core", **2013**
- **University of Galway, Geology Department**. "D" – Between a Rock and a Core", **2013**
- **University of St. Andrews**, "Defects, Diffusion and Deforming the Earth", **2013**
- **University of Brighton, Earth Sciences**, "Defects, Diffusion and Deforming the Earth", **2013**
- **University of Aberdeen, Geology Department**, "D" – Between a Rock and a Core", **2012**
- **College de France, Paris**. "Defects, Diffusion and Deformation in D", **2012**
- **Dublin Institute for Advanced Studies**, "D" - Between a Rock and a Core", **2012**
- **Kongsberg Meeting, Norway**, "Transport Properties from First Principles: Implications for the Lower Mantle and D'", **2011**
- **School of Earth and Environment, University of Leeds**. "D" – Done and Dusted or More to Learn", **2010**
- **CECAM Meeting, Switzerland**. "Simulating Diffusion from First Principles and Implications for the

Earth", 2010

- **Dept. of Earth Sciences, ETH, Zurich.** "D" and Post-perovskite: Done and Dusted or More to Learn", 2010
- **MSA Short Course, Berkely, USA.** "Simulating Diffusion", 2009
- **Plenary Lecture MAPt Conference, Edinburgh.** " Rheological Properties of Post-Perovskite", 2009
- **Goldschmidt Conference, Davos.** " Rheological Properties of Post-Perovskite and Implications for D'", 2009
- **American Physical Society, New Orleans,** "The *ab initio* Melting Curve of MgSiO₃ Perovskite Using the Coexistence Method", 2008
- **Unishigawa, Japan,** "Absolute Diffusion Rates in Perovskite and Post-Perovskite", 2008
- **Department of Geophysics, ETH Zurich,** "What are Ultra-Low-Velocity-Zones made of?" 2007
- **Dept. of Earth Sciences, University of Liverpool,** "What in Earth could Ultra-Low-Velocity-Zones be Made Of?", 2007
- **Union Session, Fall AGU,** "Is Anelasticity Hiding Chemical Heterogeneity in the Earth's Lower Mantle?", 2006
- **Mantle Dynamics Meeting, Munich,** "The High-Temperature and Pressure Elasticity of (Mg,Fe,Al)(Si,Al)O₃ Perovskite", 2006
- **AGU, Baltimore,** "Ab Initio Calculations on Spin transitions in (Mg,Fe)SiO₃ perovskite", 2006
- **Geophysical Laboratory, Washington DC,** "The Properties of Fe Bearing Minerals in the Lower Mantle: Implications for Chemical Heterogeneity, D", and ULVZs", 2006
- **Tokyo, Japan** "Ab Initio Calculations on the Elastic Properties of Post-perovskite", 2005
- **Schwabisch, Germany,** "Ab Initio Calculations on Iron Bearing Minerals in the Earth's Lower Mantle", 2005
- **San Malo, France.** "The Properties of Iron Bearing Minerals in the Earth's Lower Mantle", 2005
- **EMPG-X, Frankfurt,** "Constraining Chemical Heterogeneity in the Earth's Mantle" 2004
- **Deep Earth Meeting, Maratea, Italy,** "Ab Initio Calculations on the Properties of Lower Mantle Minerals and Implications for Seismic Tomography", 2003
- **Union Session, EGS-AGU-EUG Joint Assembly, Nice** "Are Computational Mineral Physics Results Accurate Enough to Detect Chemical Heterogeneity in the Earth's Mantle?", 2003
- **2nd Workshop of Mantle Composition, Structure and Phase Transitions, Frejus, France,** "Computational Mineral Physics and the Properties of Alumina and Iron Bearing Perovskites", 2003
- **Dept. of Earth Sciences, University of Bristol,** "The Physical Properties of Mantle Minerals: Towards Interpreting Seismic Tomography", 2002
- **Dept. of Earth Sciences, University of Leeds,** "The Physical Properties of Mantle Minerals" 2001
- **Mantle Convection and Lithospheric Deformation Meeting, Aussois, France.** "Computational Mineral Physics and the Physical Properties of Mantle Minerals", 2001
- **CECAM/Psi-k Workshop, Lyon France,** "The Effect of Aluminium on the Physical Properties of Perovskite" 2001
- **Dept. of Earth Sciences, University of Oxford,** "The Physical Properties of Mantle Minerals: Towards Interpreting Seismic Tomography" 2001
- **Mineralogical Society Winter Meeting, Manchester,** 1999
- **IUGG, Birmingham,** "Hydrolytic Weakening in Forsterite" 1999.
- **IMA, Toronto,** "Electrical Conductivity of Mantle Minerals and the Temperature of the Earth's Lower Mantle" 1998
- **University of Oslo, Norway,.** "Molecular Dynamics Simulations of Fluids" 1997
- **Keynote lecture at the European Research Conference on Crustal Fluids, Selfeld, Austria,** "Molecular dynamics simulations of Aqueous Solutions" 1996

GRANTS (PI = Principal Investigator, Co-I = Co-Investigator)

1994-2002: Royal Society University Research Fellowship, **£262,898** (PI)
1996-1998: NERC Standard Grant, **£114,059** (PI)
1996-1997: UCL Equipment Fund, **£3,300** (PI)
1997-1998: Royal Society Small Grant, **£9,800**. (PI)
1997-2000: NERC Small Grant, **£23,694** (PI)
1998-2001: NERC Standard Grant, **£106,902** (PI)
1998-1999: ESF Conference Series, **ECU 96,600** (PI)
1998-2002: NERC Super-Computing Consortium, **£804,299** (Co-I)
1999-2003: NERC Standard Grant, **£125,872** (PI)
2001-2004: JIF Infrastructure, **£1,332,473** (Co-I)
2001-2004: Paul Instrument Fund Instrumentation, **£42,700** (PI)
2002-2005: NERC eScience, **£1,657,644** (UCL-PI)
2002-2007: NERC Consortium Grant, **£870,493** (Co-I)
2004-2005: DTI Research and Development, **£67,000** (Co-I)
2005-2009: PPARC Standard Grant, **£238,512** (Co-I)
2005-2009: NERC Standard Grant, **£163,000** (Co-I)
2005-2008: NERC eScience, **£1,335,601** (UCL-PI)
2005-2009: ESF EuroCore, 5 PDRAs & 3 PhD students in 4 countries, (Co-I)
2007-2010: EU Marie Curie Training Network, **€353,862** (Co-I)
2009-2011: NERC Small Grant, **£38,969** (Co-I)
2010-2013: NERC Standard Grant, **£412,802** (PI)
2011-2014: NERC Standard Grant **£154,304** (PI)
2012-2012: NERC Directed Grant **£19,920** (PI)
2012-2015: NERC Standard Grant **£531,939** (Co-I)
2012-2015: NERC Standard Grant **£368.099** (PI)
2013-2016: STFC Consolidated Grant - **£TBC** (Co-I)