

Curriculum Vitae: Leroy (Lee) Cronin FRSE

Regius Professor of Chemistry, School of Chemistry, University of Glasgow, Glasgow, G12 8QQ, UK

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Researcher ID: <http://www.researcherid.com/rid/B-7752-2008>



Personal details:

Name: Leroy (Lee) Cronin
Date of Birth: 1st June 1973 (aged 43)

Education:

1994 - 1997 University of York
1991 - 1994 University of York

Qualifications:

BSc (1994): First Class Honours, Pure Chemistry (York University)
DPhil (1997): Inorganic Chemistry (York University)

Awards, Recognition, Fellowships, & Highlights:

2016 Feature Profile in Chemistry World "Searching for Complexity" <http://tinyurl.com/zdzvc2d>
2015 RSC Tilden Prize
2015 European Research Council Advanced Grant (2015-2020)
2015 Spin out company Listed on the AIM stock exchange CroninGroupPLC (raising ca. £6 M)
2015 1st Annual Pearlman Lecture at the Weizmann Institute of Science
2015 Solvay Lecture at the University of Belgium
2014 RISE Award (1 of the UK's top 10 Inspiring Sciences and Engineers)
2014 UK Science Council One of the top 100 UK practising Sciences
2014 EPSRC Programme Grant on Digital Synthesis (2014-2019)
2013 RSE/BP Hutton Prize
2012 RSC Corday Morgan Medal and Prize
2012 81st Henry Lecture at the Philosophical Society of Washington
2012 Visiting Professor, UPMC - University Pierre and Marie Curie, France
2011 RSC Bob Hay Lectureship
2011 Speaker and opening lecture at TEDGlobal2011 in Edinburgh
2010 Invited Lecturer, 3^{ème} cycle de Chimie, Switzerland
2009 Royal Society-Wolfson Research Merit Award
2009 Elected to the Royal Society of Edinburgh
2008 Morino Foundation Prize
2007 Philip Leverhulme Prize (£70,000)
2006 Finalist and winner (silver medal) of the Young European Chemists Award
2005 EPSRC Advanced Fellowship
1999 Alexander von Humboldt Research Fellowship
1998 Monbusho-JSPS Fellowship
1996 ICI Scientists Scholarship

Employment History:

2015 - Founding Scientific Director, CroninGroup PLC – listed on AIM since Sept 2015
2013 - Regius Chair of Chemistry (appointed by HM Queen Elizabeth II) Established in 1817
2009 - 2013 Gardiner Chair of Chemistry, Glasgow University
2006 - 2011 EPSRC Advanced Research Fellowship, Glasgow University
2006 - 2009 Professor of Chemistry, Glasgow University

2005 - 2006	Reader in Chemistry, Glasgow University
2002 - 2005	Lecturer in Chemistry, Glasgow University
2000 - 2002	Lecturer in Chemistry, Birmingham University
1999 - 2000	Alexander von Humboldt Research Fellowship
1997 - 1999	Research Fellow, University of Edinburgh

Current Research Interests: Complex Chemical Systems

Lee Cronin is the Regius Professor of Chemistry in the School of Chemistry at the University of Glasgow. The focus of Cronin's work is understanding and controlling self-assembly and self-organisation in Chemistry to develop functional molecular and nano-molecular chemical systems; linking architectural design with function and recently engineering system-level functions (e.g. coupled catalytic self-assembly, emergence of inorganic materials and fabrication of inorganic cells that allow complex cooperative behaviours). Much of this work is converging on exploring the assembly and engineering of emergent chemical systems. One target is the development of 'inorganic biology' i.e. a biological system beyond the naturally occurring 'organic biology' found on planet earth. Not only does this have ramifications for the origin of life on earth, elsewhere in the universe, the realisation of a living system assembled from the bottom up would also lead to a range of new technologies. To achieve his aims, Cronin and his group regularly collaborate with Physical, Theoretical, Organic, Materials, and Biological Chemists as well as Scientists in Chemical and Electrical Engineering, Physics and Medicine. The expertise in the Cronin group is unique bringing together chemists, chemical engineers, reaction modelling, complex system modelling, evolutionary theory, synthetic biology, robotics and AI.

Cronin is also developing several new 'reaction-formats' for chemical reactions as well as applications in catalysis, energy, and coatings. These include flow reactors for evolvable chemistry, 3D-printing 'reactionware' for the democratisation of chemistry e.g. synthesis of drugs important for the developing world (e.g. anti-malaria) as well as counterfeit drug sensors. Within Glasgow Solar Fuels, Cronin and colleagues are investigating a solar fuel cell that effectively produces a liquid fuel suitable for transport use. In 2009 he was elected to Fellowship of the Royal Society of Edinburgh and between 2006 and 2011 he was an EPSRC Advanced Research Fellow. Cronin has published over 290 papers that have amassed >10,000 citations in the world's leading scientific journals and has given over 200 invited talks. He has over 120 national and international collaborators and has active research exchanges with Beijing University of Chemical Technology, Arizona State, Emory, Hokkaido University, Tokyo University, University of Aachen, North East Normal University, and Northwestern. LC has recent / active industrial collaborations with BP (catalyst discovery, acidic materials, understanding present catalysts), Samsung (nano- materials discovery), FujiFilm (new pigments), QinetiQ (Inorganic Energy), Oxford Diffraction (Ultra Large Molecules by Crystallography), Unilever (Inorganic additives for personal care products).

Research Examples/Highlights:

- 2016 Quantifying the origins of life on a planetary scale (PNAS)
- 2016 Sizing of clusters in solution using ion mobility mass spec (JACS)
- 2016 Solution discovery of Pd₇₂ nanoring (ACIE)
- 2015 Programmable peptide synthesis (Nat Comm)
- 2015 Trapping Reactive Phosphorous Atoms in Cluster Cages (ACIE)
- 2015 New method of Hybrid Inorganic-Peptide Synthesis (JACS)
- 2014 Robotically mediated chemical evolution (Nature Comm.)
- 2014 Polyoxometalate-based flash memory devices and new types of memory device (Nature)
- 2014 Decoupled catalytic hydrogen evolution from an electron-coupled-proton-buffer (Science)
- 2013 New types of cluster-based electron transfer reagents (ACIE)
- 2013 Combined 3D printed and robotically organised synthetic system (Chem. Sci.)
- 2012 Self-assembly of the largest macrocycle ever, {W₂₀₀Co₈O₆₆₀}, within a network reactor (ACIE)
- 2012 3D printing of chemical reactions and reactors with the development of 'reactionware' (Nature Chem)
- 2012 Engineering of a chemically powered nanoscale cluster oscillator (JACS)
- 2011 Inorganic Chemical Cells potential towards Inorganic Biology (ACIE)

- 2011 Pioneered the development of Variable Temperature Mass Spectrometry (Nature Chem)
- 2010 Trapping the transient in the assembly of molybdenum blue (Science)
- 2010 Assembly of Zeolitic structures using molecular oxide synthons (Nature Chem)
- 2009 Emergent Tubular Architectures and Networks (Nature Chem)
- 2009 Molecular Metal Oxide Field Effect Transistor (Nature Nano)
- 2008 Confined Electron Transfer Reactions in Molecular Cages (ACIE)
- 2007 Observing molecular self-assembly with mass spectrometry (ACIE)
- 2006 Control of molecular self-assembly by symmetry transfer (JACS)

Strategic Roles within the University of Glasgow:

- 2015- New Glasgow Chemistry Estates Plan
- 2014- Chemistry Strategic Plan
- 2013- Chair of the Research Committee
- 2012 - Director of WestCHEM (Joint Strathclyde Glasgow Research School in Chemistry)
- 2011 - Reorganisation of the Research School for critical mass / interdisciplinary challenges
- 2010 - Chair of the Professorial Search Committee in Chemistry
- 2010 - Co-director of Glasgow Solar Fuels
- 2010 - Development of Glasgow Solar Fuels
- 2009 - Research Director School of Chemistry
- 2009 - Author the 'Chemistry-Plan' for strategic investment of ca. £8 M in Chemistry
- 2008 - College Library and Research Information Committee Member
- 2007 - Member of Departmental Research Strategy Committee

Selected Active Research Grants Grants listed below with FEC value. Total value of research portfolio >£13M.

2016	EPSRC (EP/P00153X/1) Advanced Mass Spectrometry Kit for Controlling Chemical Robots and Exploring Complex Chemical Systems	£989,800
2015	ERC (670467) SMART-POM: Artificial-Intelligence Driven Discovery and Synthesis of Polyoxometalate Clusters	£2,439,992
2014	BBSRC (BB/M011267/1) Plug'n Play Photosynthetic for Rubisco Independent Fuels	£444,430
2014	EPSRC (EP/L023652/1) Programme Grant: Programmable 'Digital' Synthesis for Discovery and Scale-up of Molecules, Clusters and Nanomaterials	£3,993,970
2014	EC FP7 EVOBLISS	£672,548
2013	EC FP7 EVOPROG	£925,671
2013	EPSRC (EP/K023004/1) Hydrogen Production using a Proton Electron Buffer	£475,175
2013	EPSRC (EP/K038885/1) Synthetic Biology applications to Water Supply and Remediation	£930,778
2013	EC FP7 (318671) MICREAGENTS	£535,369
2012	EPSRC (EP/J015156/1) Platform Grant: Programmable Molecular Metal Oxides (PMMOs) - From Fundamentals to Application	£1,792,462

Current Active Collaborators

Alexei Lapkin (Cambridge), Alfonso Jaramillo (Warwick), Dave Deamer (UCSC), Bruno Pignataro (Palermo), Caleb Scharf (Columbia), Carles Bo (ICIQ), Emmanuel Cadot (Versailles), Eric McInnes (Manchester), Fraser Stoddart (Northwestern), George Church (Harvard), Gonen Ashkenasy (Ben Gurion), Jonathan Reid (Bristol), Yufei Song (BUCT), Martin Hancz (Trento), Perdita Barran (Manchester), Quan-Feng Dong (Xiamen), Piet Hut (IAS), Ronny Neumann (Weizmann), Sijbren Otto (Groningen), Tianbo Liu (Akron), Tomoki Ogoshi (Kanazawa), Tomoyuki Akutagawa (Tohoku), Victor de Lorenzo (Madrid), John McCaskill (Bochum), Yifeng Wang (Shandong), Sara Walker (Arizona), Anna Proust (UMPC), Richard Winpenny (Manchester), Ryo Tsunashima (Yamaguchi), Hiroki Oshio (Tsukuba), Joseph Poble (Tarragona), Miles Padgett (Glasgow), Richard Cogdell (Glasgow), Douglas Paul

(Glasgow), David Cumming (Glasgow), Mike Barrett (Glasgow), Bill Sloan (Glasgow), Justin Hargreaves (Glasgow) Vihar Georgiev (Glasgow), Jon Cooper (Glasgow), Nikolaj Gadegaard (Glasgow), Steve Neale (Glasgow).

Current Research Group at University of Glasgow:

4 Senior Researchers, 24 Post-Doctoral Researchers, 21 PhD Students, 3 Technicians, 4 Project Students, 2 Graduate Interns, 2 Administration Staff.

Personnel Output From Research Group:

21 Postdoctoral fellows all in full time employment; 25 are Associate / Assistant Professors / Team leaders
50 Doctorates (all within 4 years), 1 Masters by research

Current and Previous Group Members:

(a) **Senior researchers:**

Current (year joined): Dr. De-Liang Long (2002), Dr. Geoff Cooper (2002), Dr. Haralampos Miras (2006), Dr. Laia Vilà Nadal (2011).

(b) **Postdoctoral associates:**

Current (year joined): Dr. Ross Winter (2009); Dr. Phil Kitson (2009); Dr. Jennifer S Mathieson (2011); Dr. Andrew Surman (2012); Dr. Weimin Xuan (2012); Dr. Soichiro Tsuda (2012); Dr. Alon Henson (2014); Dr. Guillaume Marie (2015); Dr. Jia Jia Chen (2015); Dr. Piotr Gromski (2015); Dr. Rebecca MacLeod (2015); Dr. Jonathan Grizou (2015); Dr. Jaroslaw Granda (2015); Dr. Jan Szymanski (2016); Dr. Sergey Zalesskiy (2016); Dr. Edward Brightman (2016); Dr. Yousef Abul-Haija (2016); Dr. Ralph Sigerson (2016); Dr. Nancy Watfa (2016); Dr. Qi Zheng (2016); Dr. James Taylor (2016); Dr. Juan Manuel Parrilla Gutierrez (2016); Dr. Jean-Patrick Francoia (2017); Dr. Abhishek Sharma (2017).

Past: Dr. Vincenza Dragone (Group Member 2015-2017); Dr. Leanne Bloor (Masters Degree at University of Strathclyde, Group Member 2012-2016); Dr Gerardo Camarasa (University of Glasgow, Lectureship, Group Member 2015-2016), Dr Salah Sharabi (University of Strathclyde, Group Member 2013-2016), Dr. Mohamed Hezwani (University of Glasgow, Group Member 2013-2016), Dr. Andrew MacDonnell (EPSRC, Group Member 2015-2015); Dr. Stefan Glatzel (Joined CroninGroup PLC, Group Member 2013-2016), Dr. Anna Andreou (Joined CroninGroup PLC, Group Member 2014-2016); Dr. Christoph Busche (Own Fellowship at the University of Glasgow, Group Member 2010-2015), Dr. Ommid Anamimoghdam (Northwestern University, Group Member (2013-2015), Dr. Michael Lee (Moved to the USA, 2014-2015), Dr. Greig Chisholm (Peak Scientific, 2012-2015), Dr. Jamie Cameron (University of Tsukuba, Group Member 2010-2015); Dr. Marie Hutin (Emmerson, Group Member 2010-2015), Dr. Vladislav Kulikov (A.T. Kearney, Germany, Group Member 2013-2015), Dr. Trevor Hinkley (Goldman Sachs, Group Member 2012-2014), Dr. Victor Sans Sangorin (University of Nottingham, Group Member 2011-2014), Dr. Roy McBurney (University of Strathclyde, Group Member 2012-2014), Dr. Mali Husby Rosnes (University of Bergen, Group Member 2007-2013), Dr. Mark Symes (University of Glasgow, Group Member 2010-2013), Dr. Yohei Takashima (Kyoto University, Group Member 2010-2013), Dr. Jingli Xie (Group Member 2011-2013), Dr. Johannes Thiel (Group Member 2011-2012), Dr. Yasutaka Suzuki (Yamaguchi University, Japan, Group Member 2011-2012), Dr. Ross Forgan (University of Glasgow, Group Member 2011-2012), Dr. Jun Yan (Centralsouth University, China, Group Member 2010-2012), Dr. Scott Mitchell (University of Zaragoza, Spain, Group Member 2010-2011), Dr. Liz Wilson (Erlangen University, Germany, Group Member 2009-2010), Dr. Craig Richmond (ICIQ, Spain, Group Member 2008-2011), Dr. Chris Ritchie (University of Melbourne, Australia, Group Member 2008-2009), Dr. Sumit Khanra (IISER Kolkata, India, Group Member 2008-2009), Dr. Carsten Streb (Erlangen University, Germany, Group Member 2008-2009), Dr. Pradeep C. Parameswaran (IIT Mandi, India, Group Member 2006-2010), Dr. Yufei Song (BUCT China, Group Member 2005-2008), Dr. Eric Burkholder (Panalytical, USA, Group Member 2005-2006), Dr.

Alexis Parenty (Pfizer UK, Group Member 2004-2008), Dr. Jesús M de la Fuente (Aragon Nanoscience Institute, Group Member 2004-2006)

(c) **Graduate students:**

PhD Candidates. Current (year joined): Robert Pow (2017); Alastair Murray (2016); Daniel Salley (2016); Stephanie Colon (2016); Naomi Johnson (2015); Dario Caramelli (2015); Edward Lee (50% University of Edinburgh, 2015); Stuart Marshall (Part Time, 2015); Sebastian Steiner (2015); Vasilios Duros (2014); Niall Kirkaldy (2014); Laurie Points (2014); David Doran (2014); Irene Suarez Marina (2013); Mari Yoshida (2013), Lewis MacDonald (2013), Sergio Martin Marti (2013), Lorna Christie (2013), Jamie Purcell (2013), Merce Martin (2012), Zied Hosni (2012)

Graduate Interns: Graham Keenan, Silke Asche

Past: James Taylor (2012-2016), Juan Manuel Parrilla Gutierrez (2012-2016), Luzian Porwol (2010-2016), Marc Rodriguez (2012-2016), Qi Zheng (2012-1016), Charikleia Sartzi (2011-2016), Phil Robbins (2011-2016), Hannah Stepto (2011-2015), Caihong Zhan (2011-2015), Vincenza Dragone (2011-2015), Andrew Macdonell (2010-2015), Carine Yvon (2010-2014), Rachel Scullion (2010-2014), Jamie Cameron (2010-2014), Hongying Zang (2010-2014), Andreu Ruiz (2010-2014), Ross Winter (2010-2014), Benjamin Rausch (2011-2014), Antoine Boulay (2009-2013), Pedro Molina Sanchez (2009-2013), Thomas Boyd (2009-2013), Jing Gao (2009-2012), Mali Husby Rosnes (2008-2011), David Gabb (2008-2011), Neus Corella Ochoa (2008-2011), Claire Lydon (2008-2011), Roslyn Eadie (2008-2011), Feng Xu (2008-2011), Jennifer S Mathieson (2007-2011), Johannes Thiel (2007-2011), Jun Yan (2007-2010), Thomas McGlone (2007-2010), Chris Flemming (2006-2009), Jacky Johnston (2006-2011), Scott Mitchell (2006-2010), Liz Wilson (2006-2009), Damiano Portinari (2005-2010), Phil Kitson (2005-2009), Craig Richmond (2005-2009), Nicola McMillan (2005-2009), Graham Newton (2005-2008), Carsten Streb (2005-2008), Chris Ritchie (2004-2008), Kevin Guthrie (2003-2008), Louise Smith (2003-2006), Hamera Abbas (2003-2006), Geoff Cooper (2002-2005), Alex Pickering (2001-2004), John Fielden (2001-2004), Alexis Parenty (2001-2004), Georg Seeber (2000-2003).

(d) **CroninGroup PLC:**

Dr Stefan Glatzel (2016); Dr Anna Andreou (2016); Paul Duddy (2016); Francis Jamieson (2016); Steve Coles (2016); Jillian Martin (2016).

Membership of External Committees & Advisory Boards (2008-):

2016- Royal Society Innovation Award Committee Member

2016- DFF Review Panel, Copenhagen, Denmark

2015- Science Advisory Board of the Center for Sustainable Materials Chemistry (CSMC), Oregon, USA.

2015- City University of New York Nanotechnology Institute, NY, USA.

2014- Beijing University of Chemical Technology International Soft Matter Centre

2013- Editor, Inorganic Chemistry Frontiers (joint RSC – Peking University new journal)

2013-5 Director of WestCHEM

2012- External reviewer for the Fundamental Centre for Living Technology (FLinT) at the University of Southern Denmark

2012- Management Group member of COST Action CM1203 PoCheMoN

2011- Member of the Advisory Committee to North East Normal University – Metal Oxide Science

2011-2 Nano Advisor “Working safely with Nanomaterials” on the definition of “Nanomaterials”

2011-4 Mentor – EPSRC ‘Inspire’ Workshop for Young Researchers

2011-2 Advisor to the European Project EVOBODY: ‘Embodied Artificial Evolution’

2011 Member of the Non-Conventional Computation Conference Special Topics Committee

2010-3 Deputy Director of WestCHEM, the Glasgow & Strathclyde Universities joint Chemistry Research School

2010- Editorial Advisory Board of CrystEngComm

2010-5 Member of the ScotCHEM Board
2010-3 Member of the Royal Society of Edinburgh Earth Sciences and Chemistry Selection Committee
2010 Conference Chair 'Solar Fuels'
2010 Conference Chair, Emerging Chirality
2009- Editorial Advisory Board for Chemical Communications
2009- Advisory Board for International Conference on Polyoxometalates
2008 Management Board of Innovative Catalysis
2008-11 Chair of Emergent the EPSRC 'emergeNet' network on complexity and emergence

Selected Invited Presentations from 2008 from a full list of over 325; selected international invites listed here

2016 Keynote Speaker, ICC42, Brest, July
Plenary Speaker, FMOCS, Newcastle, July
UK-Japan Solar Fuels Symposium, Tokyo, June
GRC Biointerfaces, Les Doublets, June
Keynote Speaker, World Biomaterials Congress, Montreal, May
Tilden Prize Lecture, Bristol University March
Oxford Chemistry, Chemical Biology Department, February

2015 Plenary Speaker, Modelling Origins of Life, Carnegie Institute, Washington, Nov
Keynote Speaker, Advanced Functional Materials, Stony Brook, June
Invited Lecture, AbSciCon, Chicago, June
Swiss Nanoscience Institute Invited Lecture, Basel, May
1st Pearlman Lecture, Weizmann Institute of Science, April
Plenary speaker, Annual Chemical Society Meeting, University College Dublin, April
Solvay Colloquium, University of Brussels, February
Earth Life Systems Institute (plenary speaker), Tokyo, January

2014 Plenary speaker, Faraday Discussion (closing speaker), Xiamen, October
Invited speaker, UK-Japan meeting on coordination chemistry, Tokyo, Sept
Distinguished visitor and creativity lecturer, Hong Baptist University, August
Keynote lecture, ALIFE, New York, July.
Invited speaker, Beilstein Symposium, Near Munich, Germany, May
Plenary lecturer, CSIRO annual meeting, Melbourne, Australia, May
Invited speaker, McBain Meeting, Cambridge, January
Keynote speaker, ISCP, Tokyo, January

2013 Keynote speaker, ACIN, July, Namur, Belgium
Invited speaker, ECAL, September, Sicily
Plenary speaker, International conference on photosynthesis, St Louis, July,
Keynote speaker, Sloan-Kettering Memorial Centre Expo, May, New York, USA.
Invited speaker, MRS special symposium on bio-inspired materials, San Francisco, May.

2012 Keynote speaker, ICC, Valencia, Spain, September
Invited speaker, GRC on Crystal Engineering, New Hampshire, USA, June
Symposium Speaker, Inorganic Chemistry, ETH-Zurich, Switzerland, May
81st Henry Lecture, Philosophical Society of Washington, USA, May
Invited speaker, Beilstein Symposium, Near Munich, Germany, May
Invited Speaker, Inorganic Chemistry, The University of Zurich, April
Invited Speaker, NASA Conference on Alternative Biology

2011 Center for Functional Nanostructures, Bad Herrenalb, Germany, September
Polyoxometalate conference, NENU, Changchun, China, August
8th National Meeting of Inorganic Chemistry, Harbin, China, August
Molecular Nanoscience Meeting, Patras, Greece, June
Solar Fuels Conference, Denmark, April

- Departmental Seminar, University of Barcelona, Barcelona, Spain, March
 Lecture on Inorganic Biology, Tokyo University, Tokyo, March
 Technical University, Berlin, Jan
- 2010 11th Conference on Solid State Chemistry joint with the 2nd Dalton Transactions International Symposium, Shanghai and Hong Kong, November
 3^{ème} cycle de Chimie, Switzerland (Geneva, Bern, Basel, Neuchâtel), October
 3rd Euehems, Nurenberg, Germany, August
 Frontiers in Metal Oxide Science, Jerusalem, Israel, July
 Non-conventional computing, Tokyo, June
 Invited lecture at the University of Tokyo, March
 Department of Chemistry Invited Lecture, Universität Kaiserslautern, January
- 2009 ESF Conference on Systems Chemistry, October
 2nd IRUN Symposium on Nanotechnology, October
 International Polyoxometalate Meeting, Bremen, Germany
 Department of Chemistry, Northwestern University, Evanston, Chicago, USA
 International Conference of Bio-inorganic Chemistry 14, Nagoya, Japan
 Université Pierre et Marie Curie, Paris, France
 International Symposium on Macrocyclic & Supramolecular Chemistry, Maastricht
- 2008 Morino Foundation Lectures, Kyoto, Tokyo and Hokkaido Universities, Japan
 EPFL, Lausanne, Switzerland
 Werner Chemical Society, Trinity College Dublin, Ireland
 University of Amsterdam, Amsterdam, The Netherlands
 Hong Kong University of Science and Technology, Hong Kong, China
 Indian Chemical Society Meeting, Bangalore, India

Science Advocacy and Media Engagement:

Within Science and Society, at a political and international level, Cronin is an advocate for Science and Engineering and is deeply committed to inspiring the public, especially young people. To achieve this he has helped develop kinetic-art exhibits that aim to explore self-assembly in the nano-world (EPSRC giants of the infinitesimal), developed a range of chemistry experiments for the Birmingham Science Museum 'thinktank', has appeared in a BBC documentary on Photosynthesis (series title; botany a blooming history), gave the Royal Society of Chemistry Edinburgh Christmas Lectures, and regularly gives public lectures and school events every year both in the UK and at Science super-schools in Japan. He also tries to explain new ideas and concepts to the public even when there are still new as with the development of 'living' inorganic systems (Inorganic Biology) which was the subject of a TED talk given at TEDGlobal 2011 in Edinburgh; this is now on the web (see: http://www.ted.com/talks/lee_cronin_making_matter_come_alive.html) and has been viewed over 370,000 times on the web in just 5 months. His work has captured the imagination of many people with over 50 articles in the press, on the web, blogs, at TEDGlobal, in NewsScientist etc. Cronin has been interviewed using a variety of media including TV, web shows (<http://twit.tv/show/dr-kikis-science-hour/115>), the Observer (<http://www.guardian.co.uk/technology/2011/aug/28/aliens-iron-evolution-lee-cronin>), and several radio programs. In press Cronin has written several general for the non-specialist including essays and also published an article in the prestigious architecture Journal, Architecture and Design (AD). Finally it is worth pointing out that Cronin has been active in discussing issues regarding energy, sustainability and climate change as part of the Glasgow funded initiative, Glasgow Solar Fuels (<http://www.glasgowsolarfuels.com>), where he is actively engage not only in fundamental research with the grand aim of generating fuels from carbon dioxide, but also engaging the public discussing issues relating to lifestyle change, land use, and energy security. For example on the 6th of February BBC Scotland came to Glasgow to film Cronin's latest water splitting breakthrough which produces an intermediate 'reduced' fuel rather than hydrogen. This media coverage was covered on Newsnight Scotland in February 2012 with a discussion live on air; it is also cover on the BBC webpages (<http://www.bbc.co.uk/news/uk-scotland-glasgow-west-16939564>). Cronin was also involved in a discussion

about Solar-Fuels on Radio 4 on the BBC's Material World on the 22nd February (available on iplayer: http://www.bbc.co.uk/iplayer/episode/b01c7sn9/Material_World_23_02_2012/).

20 'Selected' References – Cronin

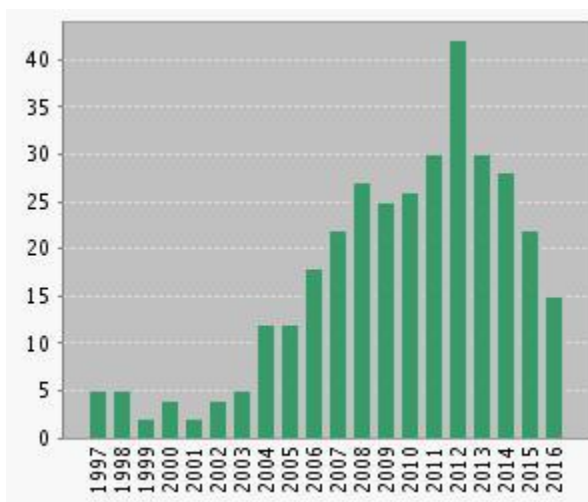
1. *Restraining symmetry in the formation of small polyoxomolybdates: Building blocks of unprecedented topology resulting from "shrink-wrapping" [H₂Mo₁₆O₅₂]¹⁰⁻-type clusters* D.-L. Long, P. Kögerler, L. J. Farrugia, L. Cronin *Angew. Chem. Int. Ed.* **42**, 4180–4183 (2003).
2. *Unveiling the transient template in the self-assembly of a molecular oxide nanowheel* H. N. Miras, G. J. T. Cooper, D.-L. Long, H. Bögge, A. Müller, C. Streb, L. Cronin *Science* **327**, 72–74 (2010).
3. *Decoupling hydrogen and oxygen evolution during electrolytic water splitting using an electron-coupled-proton buffer* M. D. Symes, L. Cronin *Nature Chem.* **5**, 403–409 (2013).
4. *A bio-inspired, small molecule electron-coupled-proton buffer for decoupling the half-reactions of electrolytic water splitting* B. Rausch, M. D. Symes, L. Cronin *J. Am. Chem. Soc.* **135**, 13656–13659 (2013).
5. *Decoupled catalytic hydrogen evolution from a molecular metal oxide redox mediator in water splitting* B. Rausch, M. D. Symes, G. Chisholm, L. Cronin *Science* **345**, 1326–1330 (2014).
6. *Design and fabrication of memory devices based on nanoscale polyoxometalate clusters* C. Busche, L. Vila-Nadal, J. Yan, H. N. Miras, D.-L. Long, V. P. Georgiev, A. Asenov, R. H. Pedersen, N. Gadegaard, M. M. Mirza, D. J. Paul, J. M. Poblet, L. Cronin *Nature* **515**, 545–549 (2014).
7. *Integrated 3D-printed reactionware for chemical synthesis and analysis* M. D. Symes, P. J. Kitson, J. Yan, C. J. Richmond, G. J. T. Cooper, R. W. Bowman, T. Vilbrandt, L. Cronin *Nature Chem.* **4**, 349–354 (2012).
8. *Combining 3D printing and liquid handling to produce user-friendly reactionware for chemical synthesis and purification* P. J. Kitson, M. D. Symes, V. Dragone, L. Cronin *Chem. Sci.* **4**, 3099–3103 (2013).
9. *3D Printed High-Throughput Hydrothermal Reactionware for Discovery, Optimization, and Scale-Up* P. J. Kitson, R. J. Marshall, D. Long, R. S. Forgan, L. Cronin *Angew. Chem. Int. Ed.* **53**, 12723–12728 (2014).
10. *Assembly of a Gigantic Polyoxometalate Cluster {W₂₀₀Co₈O₆₆₀} in a Networked Reactor System* A. R. de la Oliva, V. Sans, H. N. Miras, J. Yan, H. Zang, C. J. Richmond, D.-L. Long, L. Cronin *Angew. Chem. Int. Ed.* **51**, 12759–12762 (2012).
11. *A flow-system array for the discovery and scale up of inorganic clusters* C. J. Richmond, H. N. Miras, A. R. de la Oliva, H. Y. Zang, V. Sans, L. Paramonov, C. Makatsoris, R. Inglis, E. K. Brechin, D.-L. Long, L. Cronin *Nature Chem.* **4**, 1038–1044 (2012).
12. *Discovery of gigantic molecular nanostructures using a flow reaction array as a search engine* H.-Y. Zang, A. R. de la Oliva, H. N. Miras, D.-L. Long, R. T. McBurney, L. Cronin *Nat. Commun.* **5**, 3715 (2014).
13. *Evolution of oil droplets in a chemorobotic platform* J. M. P. Gutierrez, T. Hinkley, J. W. Taylor, K. Yanev, L. Cronin *Nat. Commun.* **5**, 5571 (2014).
14. *Confined electron-transfer reactions within a molecular metal oxide "Trojan horse"* D.-L. Long, H. Abbas, P. Kögerler, L. Cronin *Angew. Chem. Int. Ed.* **44**, 3415–3419 (2005).
15. *Reversible electron-transfer reactions within a nanoscale metal oxide cage mediated by metallic substrates* C. Fleming, D.-L. Long, N. Mcmillan, J. Johnston, N. Bovet, V. Dhanak, N. Gadegaard, P. Kögerler, L. Cronin, M. Kadodwala *Nature Nanotech.* **3**, 229–233 (2008).
16. *Probing the self-assembly of inorganic cluster architectures in solution with cryospray mass spectrometry: Growth of polyoxomolybdate clusters and polymers mediated by silver(I) ions* E. F. Wilson, H. Abbas, B. J. Duncombe, C. Streb, D.-L. Long, L. Cronin *J. Am. Chem. Soc.* **130**, 13876–13884 (2008).
17. *Observation of Fe(v)=O using variable temperature mass spectrometry and its enzyme-like C-H and C=C oxidation reactions* I. Prat, J. S. Mathieson, M. Güell, X. Ribas, J. M. Luis, L. Cronin, M. Costas *Nature Chem.* **3**, 788–793 (2011).
18. *Spontaneous assembly and real-time growth of micrometre-scale tubular structures from polyoxometalate-based inorganic solids* C. Ritchie, G. J. T. Cooper, Y.-F. Song, C. Streb, H. B. Yin, A. D. C. Parenty, D. A. MacLaren, L. Cronin *Nature Chem.* **1**, 47–52 (2009).

19. *Face-directed self-assembly of an electronically active Archimedean polyoxometalate architecture* S. G. Mitchell, C. Streb, H. N. Miras, T. Boyd, D.-L. Long, L. Cronin *Nature Chem.* **2**, 308–312 (2010).

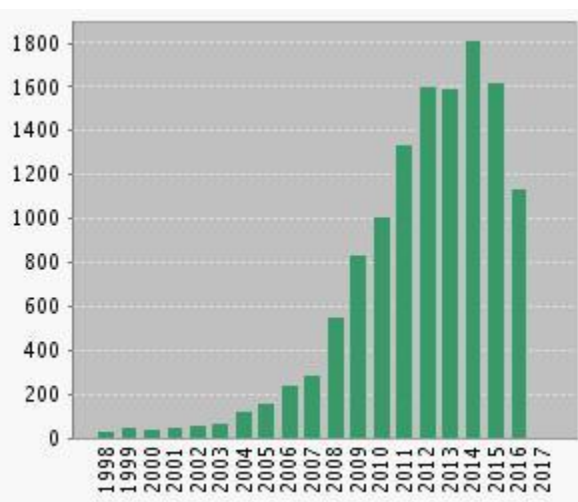
20. *A self-optimizing synthetic organic reactor system using real-time in-line NMR spectroscopy* V. Sans, L. Porwol, V. Dragone, L. Cronin *Chem. Sci.* **2**, 1258–1264 (2014).

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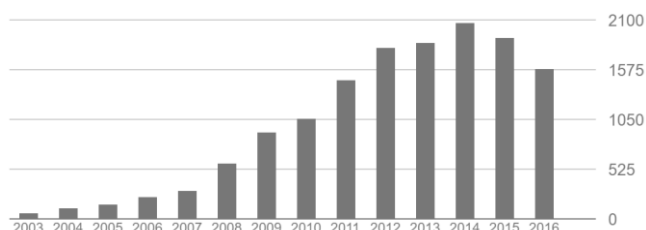
Citations Each Year



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Citations	14241	10719
h-index	61	49
i10-index	236	209



Google Scholar Snapshot September 2016

345. C. Zhan, J. M. Cameron, D. Gabb, T. Boyd, R. S. Winter, L. Vila-Nadal, S. G. Mitchell, S. Glatzel, J. Breternitz, D. H. Gregory, D. –L. Long, A. Macdonnell, L. Cronin 'A metamorphic inorganic framework that can be switched between eight single-crystalline states', *Nat. Commun.*, **2017**, 8, 14185.

344. A. Ruiz de la Oliva, V. Sans, H. N. Miras, D. –L. Long, L. Cronin 'Coding the assembly of polyoxotungstates with a programmable reaction system', *Inorg. Chem.*, **2017**,

343. T. Boyd, S. G. Mitchell, D. Gabb, D. –L. Long, Y. –F. Song, L. Cronin 'POMzites: A family of zeolitic polyoxometalate frameworks from a minimal building block library', *J. Am. Chem. Soc.*, **2017**,

342. M. Yoshida, S. Galinanes Reyes, S. Tsuda, T. Horinouchi, C. Furusawa, L. Cronin 'Time-programmable drug dosing allows the manipulation, suppression and reversal of antibiotic drug resistance *in vitro*', *Nat. Commun.*, **2017**,

341. H. N. Miras, D. –L. Long, L. Cronin 'Exploring self-assembly and the self-organization of nanoscale inorganic polyoxometalate clusters', *Advances in Inorganic Chemistry*, **2017**, 69, 1-28.

340. V. Kulikov, N. A. B. Johnson, A. J. Surman, M. Hutin, S. M. Kelly, M. Hezwani, D.-L. Long, G. Meyer, L. Cronin 'Spontaneous Assembly of an Organic–Inorganic Nucleic Acid Z-DNA Double-Helix Structure', *Angew. Chem. Int. Ed.*, **2017**, 4, 1141-1145.

339. P. J. Kitson, S. Glatzel, L. Cronin 'The digital code driven autonomous synthesis of ibuprofen automated in a 3D-printer-based robot', *Beilstein J. Org. Chem.*, **2016**, *12*, 2776-2783.
338. M. Fujibayashi, Y.-F. Song, L. Cronin, R. Tsunashima, 'Exploring the solvent mediated assembly and redox activity of a POM-organic hybrid $[\text{Na}(\text{SO}_3)_2(\text{PhPO}_3)_4\text{Mo}^{\text{V}}_4\text{Mo}^{\text{VI}}_{14}\text{O}_{49}]^{5-}$ ', *New J. Chem.*, **2016**, *40*, 8488-8492.
337. S. Glatzel, M. Hezwani, P. J. Kitson, P. S. Gromski, S. Schürer, L. Cronin, 'A Portable 3D Printer System for the Diagnosis and Treatment of Multidrug-Resistant Bacteria', *Chem.*, **2016**, *3*, 494-504.
336. W. Xuan, A. J. Surman, Q. Zheng, D. -L. Long, L. Cronin, 'Self-Templating and In Situ Assembly of a Cubic Cluster-of-Clusters Architecture Based on a $\{\text{Mo}_{24}\text{Fe}_{12}\}$ Inorganic Macrocyclic', *Angew. Chem. Int. Ed.*, **2016**, *128*, 12895-12899.
335. Y. Takashima, H. N. Miras, S. Glatzel, L. Cronin, 'Shrink wrapping redox-active crystals of poloxometalate open frameworks with organic polymers via crystal induced polymerisation', *Chem. Comm.*, **2016**, *52*, 7794-7797.
334. L. Porwol, A. Henson, P. J. Kitson, D.-L. Long, L. Cronin 'On the fly multi-modal observation of ligand synthesis and complexation of Cu complexes in flow with 'benchtop' NMR and mass spectrometry', *Inorg. Chem. Front.*, **2016**, *3*, 919-923.
333. G. Zhang, C. Liu, D.-L. Long, L. Cronin, C.-H. Tung, Y. Wang, 'Water-Soluble Pentagonal-Prismatic Titanium-Oxo Clusters', *J. Am. Chem. Soc.*, **2016**, *138*, 11097-11100.
332. J. M. Cameron, L. Vilà-Nadal, R. S. Winter, F. Iijima, J. C. Murillo, A. Rodriguez-Forteza, H. Oshio, J. M. Poblet, L. Cronin, 'Investigating the Transformations of Polyoxoanions Using Mass Spectrometry and Molecular Dynamics', *J. Am. Chem. Soc.*, **2016**, *138*, 8765-8773.
331. C. Scharf, L. Cronin, 'Quantifying the origins of life on a planetary scale', *Proc. Nat. Acad. Sci, USA*, **2016**, *113*, 8127-8132.
330. L. G. Bloor, R. Solarska, K. Bienkowski, P. J. Kulesza, J. Augustynski, M. D. Symes, L. Cronin, 'Solar-Driven Water Oxidation and Decoupled Hydrogen Production Mediated by an Electron-Coupled-Proton Buffer', *J. Am. Chem. Soc.*, **2016**, *138*, 6707-6710.
329. L. Cronin, S. Walker, 'Beyond Prebiotic Chemistry', *Science*, **2016**, *352*, 1174-1175.
328. A. J. Surman, P. J. Robbins, J. Ujma, Q. Zheng, P. E. Barran, L. Cronin, 'Sizing and Discovery of Nanosized Polyoxometalate Clusters by Mass Spectrometry', *J. Am. Chem. Soc.*, **2016**, *138*, 3824-3830.
327. L. Points, J. Grizou, L. Cronin, 'Robotic chemistry sets for the classroom', *Education in Chemistry*, **2016**, *53*, 5 22-25.
326. L. G. Christie, A. J. Surman, R. A. Scullion, F. Xu, D.-L Long, L. Cronin, 'Overcoming the Crystallization Bottleneck: A Family of Gigantic Inorganic $\{\text{Pdx}\}\text{L}$ ($x=84, 72$) Palladium Macrocyclics Discovered using Solution Techniques', *Angew. Chem. Int. Ed.*, **2016**, *55*, 12741-12745.
325. P. J. Kitson, S. Glatzel, W. Chen, C.-G. Lin, Y.-F. Song, L. Cronin, '3D printing of versatile reactionware for chemical synthesis', *Nat. Protoc.*, **2016**, *11*, 920-936.
324. H. -Y. Zang, A. J. Surman, D. -L. Long, L. Cronin, H. N. Miras, 'Exploiting the equilibrium dynamics in the self-assembly of inorganic macrosystems based upon polyoxothiometalate building blocks', *Chem. Commun.*, **2016**, *52*, 9109-9112.
323. H. -Y. Zang, J. J. Chen, D.-L Long, L. Cronin, H. N. Miras, 'Assembly of inorganic $[\text{Mo}_2\text{S}_2\text{O}_2]^{2+}$ panels connected by selenite anions to nanoscale chalcogenide-polyoxometalate clusters', *Chem. Sci.*, **2016**, *7*, 3798-3804.
322. L. J. Points, G. J. T. Cooper, A. Dolbecq, P. Mialane, L. Cronin, 'An all-inorganic polyoxometalate-polyoxocation chemical garden', *Chem. Commun.*, **2016**, *52*, 1911-1914.

321. V. Sans, L. Cronin, 'Towards dial-a-molecule by integrating continuous flow, analytics and self-optimisation', *Chem. Soc. Rev.*, **2016**, *45*, 2032-2043.
320. M. Martin-Sabi, R. S. Winter, C. Lydon, J. M. Cameron, D.-L. Long, L. Cronin, 'Rearrangement of $\{\alpha\text{-P}_2\text{W}_{15}\}$ to $\{\text{PW}_6\}$ moieties during the assembly of transition-metal-linked polyoxometalate clusters', *Chem. Commun.*, **2016**, *52*, 919-921.
319. C. Scharf, N. Virgo, H. J. Cleaves, M. Aono, N. Aubert-Kato, A. Aydinoglu, A. Barahona, L. M. Barge, S. A. Benner, M. Biehl, R. Brasser, C. J. Butch, K. Chandru, L. Cronin, S. Danielache, J. Fischer, J. Hernlund, P. Hut, T. Ikegami, J. Kimura, K. Kobayashi, C. Mariscal, S. McGlynn, B. Menard, N. Packard, R. Pascal, J. Pereto, S. Rajamani, L. Sinapayen, E. Smith, C. Switzer, K. Takai, F. Tian, Y. Ueno, M. Voytek, O. Witowski, H. Yabuta 'A Strategy for Origins of Life Research', *Astrobiology*, **2015**, *12*, 1031-1042.
318. H. Sartzi, H. N. Miras, L. Vilà-Nadal, D.-L. Long, L. Cronin, 'Trapping the δ Isomer of the Polyoxometalate-Based Keggin Cluster with a Tripodal Ligand', *Angew. Chem. Int. Ed.*, **2015**, *54*, 15488-15492.
317. A. Henson, J. M. P. Gutierrez, T. Hinkley, S. Tsuda, L. Cronin, 'Towards heterotic computing with droplets in a fully automated droplet-maker platform', *Phil. Trans. R. Soc. A.*, **2015**, 373.
316. C.-H. Zhan, R. S. Winter, Q. Zheng, J. Yan, J. M. Cameron, D.-L. Long, L. Cronin, 'Assembly of Tungsten-Oxide-Based Pentagonal Motifs in Solution Leads to Nanoscale $\{\text{W}_{48}\}$, $\{\text{W}_{56}\}$, and $\{\text{W}_{92}\}$ Polyoxometalate Clusters', *Angew. Chem. Int. Ed.*, **2015**, *54*, 14308-14312.
315. S. Tsuda, H. Jaffery, D. Doran, M. Hezwani, P. J. Robbins, M. Yoshida, L. Cronin, 'Customizable 3D Printed 'Plug and Play' Millifluidic Devices for Programmable Fluidics', *PLoS ONE*, **2015**, *10*, e0141640.
314. M. Rodriguez-Garcia, A. J. Surman, G. J. T. Cooper, I. Suarez-Marina, Z. Hosni, M. P. Lee, L. Cronin, 'Formation of oligopeptides in high yield under simple programmable conditions', *Nat. Commun.*, **2015**, *6*, 8385.
313. O. Anamimoghdam, M. D. Symes, D.-L. Long, S. Sproules, L. Cronin, G. Bucher, 'Electronically Stabilized Nonplanar Phenalenyl Radical and Its Planar Isomer', *J. Am. Chem. Soc.*, **2015**, *137*, 14944-14951.
312. L. M. Barge, S. S. S. Cardoso, J. H. E. Cartwright, G. J. T. Cooper, L. Cronin, A. De Wit, I. J. Doloboff, B. Escibano, R. E. Goldstein, F. Haudin, D. E. H. Jones, A. L. Mackay, J. Maselko, J. J. Pagano, J. Pantaleone, M. J. Russell, C. I. Sainz-Díaz, O. Steinbock, D. A. Stone, Y. Tanimoto, N. L. Thomas, 'From Chemical Gardens to Chemobionics', *Chemical Reviews*, **2015**, *115*, 8652-8703.
311. Q. Zheng, L. Vilà-Nadal, C. Busche, J. S. Mathieson, D.-L. Long, L. Cronin, 'Following the Reaction of Heteroanions inside a $\{\text{W}_{18}\text{O}_{56}\}$ Polyoxometalate Nanocage by NMR Spectroscopy and Mass Spectrometry', *Angew. Chem. Int. Ed.*, **2015**, *54*, 7895-7899.
310. J.-J. Chen, M. D. Symes, S.-C. Fan, M.-S. Zheng, H. N. Miras, Q.-F. Dong, L. Cronin, 'High-Performance Polyoxometalate-Based Cathode Materials for Rechargeable Lithium-Ion Batteries', *Adv. Mater.*, **2015**, *27*, 4649-4654.
309. B. Zhang, C. P. Pradeep, L. Cronin, T. Liu, 'Self-assembly of triangular polyoxometalate-organic hybrid macroions in mixed solvents', *Chem. Commun.*, **2015**, *51*, 8630-8633.
308. I. Nakamura, H. N. Miras, A. Fujiwara, M. Fujibayashi, Y.-F. Song, L. Cronin, R. Tsunashima, 'Investigating the Formation of "Molybdenum Blues" with Gel Electrophoresis and Mass Spectrometry', *J. Am. Chem. Soc.*, **2015**, *137*, 6524-6530.
307. A. Macdonell, N. A. B. Johnson, A. J. Surman, L. Cronin, 'Configurable Nanosized Metal Oxide Oligomers via Precise "Click" Coupling Control of Hybrid Polyoxometalates', *J. Am. Chem. Soc.*, **2015**, *137*, 5662-5665.

306. M. P. Lee, G. J. T. Cooper, T. Hinkley, G. M. Gibson, M. J. Padgett, L. Cronin, 'Development of a 3D printer using scanning projection stereolithography', *Scientific Reports*, **2015**, *5*, 9875
305. R. S. Winter, D.-L. Long, L. Cronin, 'Synthesis and Characterization of a Series of $[M_2(\beta\text{-SiW}_8\text{O}_{31})_2]^{n-}$ Clusters and Mechanistic Insight into the Reorganization of $\{\beta\text{-SiW}_8\text{O}_{31}\}$ into $\{\alpha\text{-SiW}_9\text{O}_{34}\}$ ', *Inorg. Chem.*, **2015**, *54*, 4151-4155.
304. V. P. Georgiev, S. M. Amoroso, T. M. Ali, L. Vilà-Nadal, C. Busche, L. Cronin, A. Asenov, 'Comparison Between Bulk and FDSOI POM Flash Cell: A Multiscale Simulation Study', *Electron Devices, IEEE Transactions on*, **2015**, *62*, 680-684.
303. B. Wu, S. Li, Y. Lei, H. Hu, N. de Sousa Amadeu, C. Janiak, J. S. Mathieson, D.-L. Long, L. Cronin, X.-J. Yang, 'The Effect of the Spacer of Bis(biurea) Ligands on the Structure of A2L3-type (A=anion) Phosphate Complexes', *Chem. Eur. J.*, **2015**, *21*, 2588-2593.
302. V. Sans, L. Porwol, V. Dragone, L. Cronin, 'A self optimizing synthetic organic reactor system using real-time in-line NMR spectroscopy', *Chem. Sci.*, **2014**, *6*, 1258-1264
301. J. M. P. Gutierrez, T. Hinkley, J. W. Taylor, K. Yanev, L. Cronin, 'Hardware and Software manual for Evolution of Oil Droplets in a Chemo-Robotic Platform', *Preprint at <http://arxiv.org/abs/1411.1953>*, **2014**,
300. J. M. P. Gutierrez, T. Hinkley, J. W. Taylor, K. Yanev, L. Cronin, 'Evolution of oil droplets in a chemorobotic platform', *Nat. Commun.*, **2014**, *5*, 5571
299. L. Cronin, 'Next generation materials for energy chemistry: concluding remarks', *Faraday Discussions*, **2014**, *176*, 459-465.
298. C. Busche, L. Vilà-Nadal, J. Yan, H. N. Miras, D.-L. Long, V. P. Georgiev, A. Asenov, R. H. Pedersen, N. Gadegaard, M. M. Mirza, D. J. Paul, J. M. Poblet, L. Cronin, 'Design and fabrication of memory devices based on nanoscale polyoxometalate clusters', *Nature*, **2014**, *515*, 545-549.
297. W. Xuan, A. J. Surman, H. N. Miras, D.-L. Long, L. Cronin, 'Controlling the Ring Curvature, Solution Assembly, and Reactivity of Gigantic Molybdenum Blue Wheels', *J. Am. Chem. Soc.*, **2014**, *136*, 14114-14120.
296. P. J. Kitson, R. J. Marshall, D. Long, R. S. Forgan, L. Cronin, '3D Printed High-Throughput Hydrothermal Reactionware for Discovery, Optimization, and Scale-Up', *Angew. Chem. Int. Ed.*, **2014**, *53*, 12723-12728.
295. C. Zhan, J. M. Cameron, J. Gao, J. W. Purcell, D.-L. Long, L. Cronin, 'Time-Resolved Assembly of Cluster-in-Cluster $\{\text{Ag}_{12}\}$ -in- $\{\text{W}_{76}\}$ Polyoxometalates under Supramolecular Control', *Angew. Chem. Int. Ed.*, **2014**, *53*, 10362-10366.
294. R. S. Winter, J. M. Cameron, L. Cronin, 'Controlling the Minimal Self Assembly of "Complex" Polyoxometalate Clusters', *J. Am. Chem. Soc.*, **2014**, *136*, 12753-12761.
293. V. Bagchi, P. Paraskevopoulou, P. Das, L. Chi, Q. Wang, A. Choudhury, J. S. Mathieson, L. Cronin, D. B. Pardue, T. R. Cundari, G. Mitrikas, Y. Sanakis, P. Stavropoulos, 'A Versatile Tripodal Cu(I) Reagent for C–N Bond Construction via Nitrene-Transfer Chemistry: Catalytic Perspectives and Mechanistic Insights on C–H Aminations/Amidations and Olefin Aziridinations', *J. Am. Chem. Soc.*, **2014**, *136*, 11362-11381.
292. B. Rausch, M. D. Symes, G. Chisholm, L. Cronin, 'Decoupled catalytic hydrogen evolution from a molecular metal oxide redox mediator in water splitting', *Science*, **2014**, *345*, 1326-1330.
291. H. N. Miras, L. Vilà-Nadal, L. Cronin, 'Polyoxometalate based open-frameworks (POM-OFs)', *Chem. Soc. Rev.*, **2014**, *43*, 5679-5699.

290. R. A. Scullion, A. J. Surman, F. Xu, J. S. Mathieson, D.-L. Long, F. Haso, T. Liu, L. Cronin, 'Exploring the Symmetry, Structure, and Self-Assembly Mechanism of a Gigantic Seven-Fold Symmetric {Pd84} Wheel', *Angew. Chem. Int. Ed.*, **2014**, *53*, 10032-10037.
289. P. J. Kitson, A. Macdonell, S. Tsuda, H. Zang, D.-L. Long, L. Cronin, 'Bringing Crystal Structures to Reality by Three-Dimensional Printing', *Cryst. Growth Des.*, **2014**, *14*, 2720-2724.
288. G. Chisholm, P. Kitson, N. Kirkaldy, L. Bloor, L. Cronin, '3D Printed Flow Plates for the Electrolysis of Water: an Economic and Adaptable Approach to Device Manufacture', *Energy Environ. Sci.*, **2014**, *7*, 3026-3032.
287. V. P. Georgiev, S. Markov, L. Vilà-Nadal, C. Busche, L. Cronin, A. Asenov, 'Optimization and Evaluation of Variability in the Programming Window of a Flash Cell With Molecular Metal-2013;Oxide Storage', *IEEE Trans. Electron Devices*, **2014**, *61*, 2019-2026.
286. C.-G. Lin, W. Chen, D.-L. Long, L. Cronin, Y.-F. Song, 'Step-by-step covalent modification of Cr-templated Anderson-type polyoxometalates', *Dalton Trans.*, **2014**, *43*, 8587-8590.
285. H.-Y. Zang, A. R. de la Oliva, H. N. Miras, D.-L. Long, R. T. McBurney, L. Cronin, 'Discovery of gigantic molecular nanostructures using a flow reaction array as a search engine', *Nat. Commun.*, **2014**, *5*, 3715.
284. P. I. Molina, H. N. Miras, D.-L. Long, L. Cronin, 'Assembly and core transformation properties of two tetrahedral clusters: $[\text{Fe}^{\text{III}}\text{P}_8\text{W}_{60}\text{O}_{227}(\text{OH})_{15}(\text{H}_2\text{O})_2]^{30-}$ and $[\text{Fe}^{\text{III}}\text{P}_8\text{W}_{60}\text{O}_{224}(\text{OH})_{12}(\text{PO}_4)_4]^{33-}$ ', *Dalton Trans.*, **2014**, *43*, 5190-5199.
283. C. Yvon, A. J. Surman, M. Hutin, J. Alex, B. O. Smith, D.-L. Long, L. Cronin, 'Polyoxometalate Clusters Integrated into Peptide Chains and as Inorganic Amino Acids: Solution- and Solid-Phase Approaches', *Angew. Chem. Int. Ed.*, **2014**, *126*, 3404-3409.
282. Y. Takashima, D.-L. Long, L. Cronin, 'Towards imaging electron density inside metal-organic framework structures', *Chem. Commun.*, **2014**, *50*, 2271-2274.
281. J. S. Mathieson, G. J. T. Cooper, M. D. Symes, L. Cronin, 'Quantification of ion binding using electrospray mass spectrometry', *Inorganic Chemistry Frontiers*, **2014**, *1*, 49-52.
280. A. Cereda, A. Hitchcock, M. D. Symes, L. Cronin, T. S. Bibby, A. K. Jones, 'A Bioelectrochemical Approach to Characterize Extracellular Electron Transfer by *Synechocystis* sp. PCC6803', *PLoS ONE*, **2014**, *9*, e91484.
279. J. M. Cameron, J. Gao, D.-L. Long, L. Cronin, 'Self-assembly and structural transformations of high-nuclearity palladium-rich polyoxometalates', *Inorganic Chemistry Frontiers*, **2014**, *1*, 178-185.
278. J. M. Cameron, J. Gao, L. Vilà-Nadal, D.-L. Long, L. Cronin, 'Formation, self-assembly and transformation of a transient selenotungstate building block into clusters, chains and macrocycles', *Chem. Commun.*, **2014**, *50*, 2155-2157.
277. V. Sans, S. Glatzel, F. J. Douglas, D. A. Maclaren, A. Lapkin, L. Cronin, 'Non-equilibrium dynamic control of gold nanoparticle and hyper-branched nanogold assemblies', *Chem. Sci.*, **2014**, *5*, 1153-1157.
276. L. G. Bloor, P. I. Molina, M. D. Symes, L. Cronin, 'Low pH Electrolytic Water Splitting Using Earth-Abundant Metastable Catalysts That Self-Assemble in Situ', *J. Am. Chem. Soc.*, **2014**, *136*, 3304-3311.
275. A. Macdonell, L. Cronin, 'Inorganic Capsules: Redox-Active Guests in Metal Cages', *Organic Nanomaterials: Synthesis, Characterization, and Device Applications*, **2013**, 331-345, Ed. Tomás Torres, Giovanni Bottari.

274. A. G. Boulay, G. J. T. Cooper, L. Cronin, 'Directed Assembly of Polyoxometalates across Length Scales: From Macro-Molecules to Microsystems and ICells', *Polyoxometalate Chemistry: Some recent Trends* Vol. 8, **2013**, 101-153, Ed. Francis Sécheresse.
273. M. Hutin, M. H. Rosnes, D.-L. Long, L. Cronin, 'Polyoxometalates: Synthesis and Structure – From Building Blocks to Emergent Materials', *Comprehensive Inorganic Chemistry II* Vol. 2, **2013**, 241-269, Ed. Jan; Poeppelemeier Reedick, Kenneth.
272. H.-Y. Zang, H. N. Miras, D.-L. Long, B. Rausch, L. Cronin, 'Template-Directed Assembly of Polyoxothiometalate Scaffolds into Nanomolecular Architectures', *Angew. Chem. Int. Ed.*, **2013**, 52, 6903-6906.
271. L. Vilà-Nadal, S. G. Mitchell, S. Markov, C. Busche, V. Georgiev, A. Asenov, L. Cronin, 'Towards Polyoxometalate-Cluster-Based Nano-Electronics', *Chem. Eur. J.*, **2013**, 19, 16502-16511.
270. M. H. Rosnes, C. Musumeci, C. Yvon, A. Macdonell, C. P. Pradeep, C. Sartorio, D.-L. Long, B. Pignataro, L. Cronin, 'Exploring the Interplay Between Ligand Derivatisation and Cation Type in the Assembly of Hybrid Polyoxometalate Mn-Andersons', *Small*, **2013**, 9, 2316-2324.
269. J. S. Mathieson, M. H. Rosnes, V. Sans, P. J. Kitson, L. Cronin, 'Continuous parallel ESI-MS analysis of reactions carried out in a bespoke 3D printed device', *Beilstein J. Nanotechnol.*, **2013**, 4, 285-291.
268. B. Jing, M. Hutin, E. Connor, L. Cronin, Y. Zhu, 'Polyoxometalate macroion induced phase and morphology instability of lipid membrane', *Chem. Sci.*, **2013**, 4, 3818-3826.
267. O. Anamimoghadam, M. D. Symes, C. Busche, D.-L. Long, S. T. Caldwell, C. Flors, S. Nonell, L. Cronin, G. Bucher, 'Naphthoxanthanyl, a New Stable Phenalenyl Type Radical Stabilized by Electronic Effects', *Org. Lett.*, **2013**, 15, 2970-2973.
266. C. Yvon, A. Macdonell, S. Buchwald, A. J. Surman, N. Follet, J. Alex, D.-L. Long, L. Cronin, 'A collection of robust methodologies for the preparation of asymmetric hybrid Mn-Anderson polyoxometalates for multifunctional materials', *Chem. Sci.*, **2013**, 4, 3810-3817.
265. H.-Y. Zang, J.-J. Chen, D.-L. Long, L. Cronin, H. N. Miras, 'Assembly of thiometalate-based $\{Mo_{16}\}$ and $\{Mo_{36}\}$ composite clusters combining $[Mo_2O_2S_2]^{2+}$ cations and selenite anions', *Adv. Mater.*, **2013**, 25, 6245-6249.
264. D.-L. Long, J. Yan, A. R. de la Oliva, C. Busche, H. N. Miras, R. J. Errington, L. Cronin, 'A redox-triggered structural rearrangement in an iodate-templated polyoxotungstate cluster cage', *Chem. Commun.*, **2013**, 49, 9731-9733.
263. W. Chen, D. Ma, J. Yan, T. Boyd, L. Cronin, D.-L. Long, Y.-F. Song, '0D to 1D Switching of Hybrid Polyoxometalate Assemblies at the Nanoscale by Using Molecular Control', *ChemPlusChem*, **2013**, 78, 1226-1229.
262. B. Rausch, M. D. Symes, L. Cronin, 'A bio-inspired, small molecule electron-coupled-proton buffer for decoupling the half-reactions of electrolytic water splitting', *J. Am. Chem. Soc.*, **2013**, 135, 13656-13659.
261. P. Yin, T. Li, R. S. Forgan, C. Lydon, X. Zuo, Z. N. Zheng, B. Lee, D.-L. Long, L. Cronin, T. Liu, 'Exploring the programmable assembly of a polyoxometalate-organic hybrid via metal ion coordination', *J. Am. Chem. Soc.*, **2013**, 135, 13425-13432.
260. L. Vilà-Nadal, K. Peuntinger, C. Busche, J. Yan, D. Lüders, D.-L. Long, J. M. Poblet, D. M. Guldi, L. Cronin, 'Polyoxometalate $\{W_{18}O_{56}XO_6\}$ Clusters with Embedded Redox-Active Main-Group Templates as Localized Inner-Cluster Radicals', *Angew. Chem. Int. Ed.*, **2013**, 52, 9695-9699.
259. C. Kato, S. Nishihara, R. Tsunashima, Y. Tatewaki, S. Okada, X.-M. Ren, K. Inoue, D.-L. Long, L. Cronin, 'Quick and selective synthesis of $Li_6[\alpha-P_2W_{18}O_{62}] \cdot 28H_2O$ soluble in various organic solvents', *Dalton Trans.*, **2013**, 42, 11363-11366.

258. P. I. Molina, H. N. Miras, D.-L. Long, L. Cronin, 'Exploring the Assembly of Supramolecular Polyoxometalate Triangular Morphologies with Johnson Solid Cores: $[(\text{Mn}^{\text{II}}(\text{H}_2\text{O})_3)_2(\text{K subset of } \{\text{W}-(\text{GeW}_{10}\text{Mn}_2\text{O}_{38})_3\})]^{19-}$ ', *Inorg. Chem.*, **2013**, *52*, 9284-9289.
257. M. D. Symes, R. J. Cogdell, L. Cronin, 'Designing artificial photosynthetic devices using hybrid organic-inorganic modules based on polyoxometalates', *Phil. Trans. R. Soc. A*, **2013**, 371.
256. R. J. Cogdell, A. T. Gardiner, P. I. Molina, L. Cronin, 'The use and misuse of photosynthesis in the quest for novel methods to harness solar energy to make fuel', *Phil. Trans. R. Soc. A*, **2013**, 371.
255. P. J. Kitson, M. D. Symes, V. Dragone, L. Cronin, 'Combining 3D printing and liquid handling to produce user-friendly reactionware for chemical synthesis and purification', *Chem. Sci.*, **2013**, *4*, 3099-3103.
254. M. Hutin, C. Yvon, J. Yan, A. Macdonell, D.-L. Long, L. Cronin, 'Programming the assembly of carboxylic acid-functionalised hybrid polyoxometalates', *CrystEngComm*, **2013**, *15*, 4422-4430.
253. R. S. Winter, J. Yan, C. Busche, J. S. Mathieson, A. Prescimone, E. K. Brechin, D.-L. Long, L. Cronin, 'Nanoscale Control of Polyoxometalate Assembly: A $\{\text{Mn}_8\text{W}_4\}$ Cluster within a $\{\text{W}_{36}\text{Si}_4\text{Mn}_{10}\}$ Cluster Showing a New Type of Isomerism', *Chem. Eur. J.*, **2013**, *19*, 2976-2981.
252. V. Dragone, V. Sans, M. H. Rosnes, P. J. Kitson, L. Cronin, '3D-printed devices for continuous-flow organic chemistry', *Beilstein J. Org. Chem.*, **2013**, *9*, 951-959.
251. M. D. Symes, L. Cronin, 'Decoupling hydrogen and oxygen evolution during electrolytic water splitting using an electron-coupled-proton buffer', *Nature Chem.*, **2013**, *5*, 403-409.
250. J. M. Cameron, G. N. Newton, C. Busche, D.-L. Long, H. Oshio, L. Cronin, 'Synthesis and characterisation of a lanthanide-capped dodecavanadate cage', *Chem. Commun.*, **2013**, *49*, 3395-3397.
249. H. N. Miras, G. I. Chilas, L. Cronin, T. A. Kabanos, 'Sulfite Anions as Structure-Directing Templates for the Engineering of Modular Polyoxometalates', *Eur. J. Inorg. Chem.*, **2013**, 1620-1630.
248. P. J. Robbins, A. J. Surman, J. Thiel, D.-L. Long, L. Cronin, 'Use of ion-mobility mass spectrometry (IMS-MS) to map polyoxometalate Keplerate clusters and their supramolecular assemblies', *Chem. Commun.*, **2013**, *49*, 1909-1911.
247. J. Gao, J. Yan, S. Beeg, D.-L. Long, L. Cronin, 'One-Pot versus Sequential Reactions in the Self-Assembly of Gigantic Nanoscale Polyoxotungstates', *J. Am. Chem. Soc.*, **2012**, *135*, 1796-1805.
246. A. R. de la Oliva, V. Sans, H. N. Miras, J. Yan, H. Zang, C. J. Richmond, D.-L. Long, L. Cronin, 'Assembly of a Gigantic Polyoxometalate Cluster $\{\text{W}_{200}\text{Co}_8\text{O}_{660}\}$ in a Networked Reactor System', *Angew. Chem. Int. Ed.*, **2012**, *51*, 12759-12762.
245. M. L. Baker, G. A. Timco, S. Piligkos, J. S. Mathieson, H. Mutka, F. Tuna, P. Kozłowski, M. Antkowiak, T. Guidi, T. Gupta, H. Rath, R. J. Woolfson, G. Kamieniarz, R. G. Pritchard, H. Weihe, L. Cronin, G. Rajaraman, D. Collison, E. J. McInnes, R. E. Winpenny, 'A classification of spin frustration in molecular magnets from a physical study of large odd-numbered-metal, odd electron rings', *Proc. Natl. Acad. Sci. USA*, **2012**, *109*, 19113-19118.
244. G. J. Cooper, R. W. Bowman, E. P. Magennis, F. Fernandez-Trillo, C. Alexander, M. J. Padgett, L. Cronin, 'Directed Assembly of Inorganic Polyoxometalate-based Micrometer-Scale Tubular Architectures by Using Optical Control', *Angew. Chem. Int. Ed.*, **2012**, *51*, 12754-12758.

243. C. J. Richmond, H. N. Miras, A. R. de la Oliva, H. Y. Zang, V. Sans, L. Paramonov, C. Makatsoris, R. Inglis, E. K. Brechin, D.-L. Long, L. Cronin, 'A flow-system array for the discovery and scale up of inorganic clusters', *Nature Chem.*, **2012**, *4*, 1038-1044.
242. L. Cronin, A. Müller, 'From serendipity to design of polyoxometalates at the nanoscale, aesthetic beauty and applications', *Chem. Soc. Rev.*, **2012**, *41*, 7333-7334.
241. H. N. Miras, J. Yan, D.-L. Long, L. Cronin, 'Engineering polyoxometalates with emergent properties', *Chem. Soc. Rev.*, **2012**, *41*, 7403-7430.
240. C. Lydon, M. M. Sabi, M. D. Symes, D.-L. Long, M. Murrie, S. Yoshii, H. Nojiri, L. Cronin, 'Directed assembly of nanoscale Co(II)-substituted $\{Co_9[P_2W_{15}]_3\}$ and $\{Co_{14}[P_2W_{15}]_4\}$ polyoxometalates', *Chem. Commun.*, **2012**, *48*, 9819-9821.
239. M. N. Corella-Ochoa, H. N. Miras, D.-L. Long, L. Cronin, 'Controlling the Self-Assembly of a Mixed-Metal Mo/V-Selenite Family of Polyoxometalates', *Chem. Eur. J.*, **2012**, *18*, 13743-13754.
238. P. J. Kitson, M. H. Rosnes, V. Sans, V. Dragone, L. Cronin, 'Configurable 3D-Printed millifluidic and microfluidic 'lab on a chip' reactionware devices', *Lab Chip*, **2012**, *12*, 3267-3271.
237. D.-L. Long, L. Cronin, 'Pushing the frontiers in polyoxometalate and metal oxide cluster science', *Dalton Trans.*, **2012**, *41*, 9815-9816.
236. F. Li, D.-L. Long, J. M. Cameron, H. N. Miras, C. P. Pradeep, L. Xu, L. Cronin, 'Cation induced structural transformation and mass spectrometric observation of the missing dodecavanadomanganate(IV)', *Dalton Trans.*, **2012**, *41*, 9859-9862.
235. J. Fielden, K. Quasdorf, L. Cronin, P. Kögerler, 'A fluorophosphate-based inverse Keggin structure', *Dalton Trans.*, **2012**, *41*, 9876-9878.
234. D. Gabb, C. P. Pradeep, H. N. Miras, S. G. Mitchell, D.-L. Long, L. Cronin, 'Organic-soluble lacunary $\{M_2(P_2W_{15})_2\}$ polyoxometalate sandwiches showing a previously unseen $\alpha\beta\beta\alpha$ isomerism', *Dalton Trans.*, **2012**, *41*, 10000-10005.
233. M. H. Rosnes, C. Yvon, D.-L. Long, L. Cronin, 'Mapping the synthesis of low nuclearity polyoxometalates from octamolybdates to Mn-Anderson clusters', *Dalton Trans.*, **2012**, *41*, 10071-10079.
232. R. J. Cogdell, A. T. Gardiner, L. Cronin, 'Learning from photosynthesis: how to use solar energy to make fuels', *Phil. Trans. R. Soc. A*, **2012**, *370*, 3819-3826.
231. H. Zang, H. N. Miras, J. Yan, D.-L. Long, L. Cronin, 'Assembly and Autochirogenesis of a Chiral Inorganic Polythioanion Möbius Strip via Symmetry Breaking', *J. Am. Chem. Soc.*, **2012**, *134*, 11376-11379.
230. F. Xu, H. N. Miras, R. A. Scullion, D.-L. Long, J. Thiel, L. Cronin, 'Correlating the magic numbers of inorganic nanomolecular assemblies with a $\{Pd_{84}\}$ molecular-ring Rosetta Stone', *Proc. Natl. Acad. Sci. USA*, **2012**, *109*, 11609-11612.
229. P. Yin, C. P. Pradeep, B. Zhang, F.-Y. Li, C. Lydon, M. H. Rosnes, D. Li, E. Bitterlich, L. Xu, L. Cronin, T. Liu, 'Controllable Self-Assembly of Organic-Inorganic Amphiphiles Containing Dawson Polyoxometalate Clusters', *Chem. Eur. J.*, **2012**, *18*, 8157-8162.
228. B. Nemeth, S. Tsuda, C. Busche, L. Cronin, D. R. S. Cumming, 'ISFET sensor system for real-time detection of extracellular pH oscillations in slime mould', *Electron. Lett.*, **2012**, *48*, 143-U120.
227. J. Fielden, D.-L. Long, M. Speldrich, P. Kögerler, L. Cronin, ' $Co_xCu_{1-x}(DDOP)(OH_2)(NO_3)$ (NO_3): hydrogen bond-driven distortion of cobalt(II) by solid solution 'network mismatch'', *Dalton Trans.*, **2012**, *41*, 4927-4934.

226. A. G. Boulay, G. J. T. Cooper, L. Cronin, 'Morphogenesis of polyoxometalate cluster-based materials to microtubular network architectures', *Chem. Commun.*, **2012**, *48*, 5088-5090.
225. D. Endo, T. Akutagawa, K. Kubo, S.-I. Noro, L. Cronin, T. Nakamura, 'Molecular Motions and Hydrogen-Bonding Networks in (*o*-Aminoanilinium)-(Crown Ethers)- [PMo₁₂O₄₀]⁴⁻ Crystals', *Bull. Chem. Soc. Jpn.*, **2012**, *85*, 305-315.
224. M. E. Belowich, C. Valente, R. A. Smaldone, D. C. Friedman, J. Thiel, L. Cronin, J. F. Stoddart, 'Positive Cooperativity in the Template-Directed Synthesis of Monodisperse Macromolecules', *J. Am. Chem. Soc.*, **2012**, *134*, 5243-5261.
223. H. N. Miras, M. Sorus, J. Hawke, D. O. Sells, E. J. L. McInnes, L. Cronin, 'Oscillatory Template Exchange in Polyoxometalate Capsules: A Ligand-Triggered, Redox-Powered, Chemically Damped Oscillation', *J. Am. Chem. Soc.*, **2012**, *134*, 6980-6983.
222. M. D. Symes, P. J. Kitson, J. Yan, C. J. Richmond, G. J. T. Cooper, R. W. Bowman, T. Vilbrandt, L. Cronin, 'Integrated 3D-printed reactionware for chemical synthesis and analysis', *Nature Chem.*, **2012**, *4*, 349-354.
221. B. Nemeth, M. D. Symes, A. G. Boulay, C. Busche, G. J. T. Cooper, D. R. S. Cumming, L. Cronin, 'Real-Time Ion-Flux Imaging in the Growth of Micrometer-Scale Structures and Membranes', *Adv. Mater.*, **2012**, *24*, 1238-1242.
220. B. Nemeth, C. Busche, S. Tsuda, L. Cronin, D. Cumming, 'Imaging the Belousov-Zhabotinsky reaction in real time using an ion sensitive array', *Chem. Commun.*, **2012**, *48*, 5085-5087.
219. J. Gao, J. Yan, S. Beeg, D.-L. Long, L. Cronin, 'Assembly of Molecular "Layered" Heteropolyoxometalate Architectures', *Angew. Chem. Int. Ed.*, **2012**, *51*, 3373-3376.
218. C. Lydon, C. Busche, H. N. Miras, A. Delf, D.-L. Long, L. Yellowlees, L. Cronin, 'Nanoscale Growth of Molecular Oxides: Assembly of a {V₆} Double Cubane Between Two Lacunary {P₂W₁₅} Polyoxometalates', *Angew. Chem. Int. Ed.*, **2012**, *51*, 2115-2118.
217. H. N. Miras, C. J. Richmond, D.-L. Long, L. Cronin, 'Solution-Phase Monitoring of the Structural Evolution of a Molybdenum Blue Nanoring', *J. Am. Chem. Soc.*, **2012**, *134*, 3816-3824.
216. J. Thiel, P. I. Molina, M. D. Symes, L. Cronin, 'Insights into the Self-Assembly Mechanism of the Modular Polyoxometalate "Keggin-Net" Family of Framework Materials and Their Electronic Properties', *Cryst. Growth Des.*, **2012**, *12*, 902-908.
215. R. Q. Cabrera, S. Firth, C. S. Blackman, D.-L. Long, L. Cronin, P. F. McMillan, 'Spectroscopic studies of sulfite-based polyoxometalates at high temperature and high pressure', *J. Solid State Chem.*, **2012**, *186*, 171-176.
214. R. Eadie, C. Richmond, S. Moreton, L. Cronin, 'Switching between ring closed and open N-incorporated heterocycles with tuneable charges and modular reactivity based upon 5-(2-bromoethyl)phenanthridinium bromide', *Org. Biomol. Chem.*, **2012**, *10*, 2026-2034.
213. F. Cui, S. Li, C. Jia, J. S. Mathieson, L. Cronin, X.-J. Yang, B. Wu, 'Anion-Dependent Formation of Helicates versus Mesocates of Triple-Stranded M₂L₃ (M = Fe²⁺, Cu²⁺) Complexes', *Inorg. Chem.*, **2012**, *51*, 179-187.
212. L. Vilà-Nadal, S. G. Mitchell, D.-L. Long, A. Rodríguez-Forteza, X. López, J. M. Poblet, L. Cronin, 'Exploring the rotational isomerism in non-classical Wells–Dawson anions {W₁₈X}: a combined theoretical and mass spectrometry study', *Dalton Trans.*, **2012**, *41*, 2264-2271.
211. R. Tsunashima, C. J. Richmond, L. Cronin, 'Exploring the mobility of nanoscale polyoxometalates using gel electrophoresis', *Chem. Sci.*, **2012**, *3*, 343-348.

210. T. McGlone, J. Thiel, C. Streb, D.-L. Long, L. Cronin, 'An unprecedented silver-decavanadate dimer investigated using ion-mobility mass spectrometry', *Chem. Commun.*, **2012**, *48*, 359-361.
209. J. Thiel, D. Yang, M. H. Rosnes, X. Liu, C. Yvon, S. E. Kelly, Y.-F. Song, D.-L. Long, L. Cronin, 'Observing the Hierarchical Self-Assembly and Architectural Bistability of Hybrid Molecular Metal Oxides Using Ion-Mobility Mass Spectrometry', *Angewandte Chemistry International Edition*, **2011**, *50*, 8871-8875.
208. C. Musumeci, M. H. Rosnes, F. Giannazzo, M. D. Symes, L. Cronin, B. Pignataro, 'Smart High- κ Nanodielectrics Using Solid Supported Polyoxometalate-Rich Nanostructures', *ACS Nano*, **2011**, *5*, 9992-9999.
207. H. N. Miras, H. Y. Zang, D.-L. Long, L. Cronin, 'Direct Synthesis and Mass Spectroscopic Observation of the $\{M_{40}\}$ Polyoxothiometalate Wheel', *Eur. J. Inorg. Chem.*, **2011**, 5105-5111.
206. L. Vilà-Nadal, S. G. Mitchell, A. Rodríguez-Forteza, H. N. Miras, L. Cronin, J. M. Poblet, 'Connecting theory with experiment to understand the initial nucleation steps of heteropolyoxometalate clusters', *Phys. Chem. Chem. Phys.*, **2011**, *13*, 20136-20145.
205. G. J. T. Cooper, P. J. Kitson, R. Winter, M. Zagnoni, D.-L. Long, L. Cronin, 'Modular Redox-Active Inorganic Chemical Cells: iCHELLs', *Angew. Chem. Int. Ed.*, **2011**, *50*, 10373-10376.
204. T. Boyd, S. G. Mitchell, D. Gabb, D.-L. Long, L. Cronin, 'Investigating cation binding in the polyoxometalate-super-crown $[P_8W_{48}O_{184}]^{40-}$ ', *Chem. Eur. J.*, **2011**, *17*, 12010-12014.
203. S. G. Mitchell, P. I. Molina, S. Khanra, H. N. Miras, A. Prescimone, G. J. T. Cooper, R. S. Winter, E. K. Brechin, D.-L. Long, R. J. Cogdell, L. Cronin, 'A mixed-valence manganese cubane trapped by inequivalent trilacunary polyoxometalate ligands', *Angew. Chem. Int. Ed.*, **2011**, *50*, 9154-9157.
202. I. Prat, J. S. Mathieson, M. Güell, X. Ribas, J. M. Luis, L. Cronin, M. Costas, 'Observation of Fe(v)=O using variable-temperature mass spectrometry and its enzyme-like C-H and C=C oxidation reactions', *Nature Chem.*, **2011**, *3*, 788-793.
201. H. N. Miras, D. Stone, D.-L. Long, E. J. L. McInnes, P. Kögerler, L. Cronin, 'Exploring the Structure and Properties of Transition Metal Templated $\{VM_{17}(VO_4)_2\}$ Dawson-Like Capsules', *Inorg. Chem.*, **2011**, *50*, 8384-8391.
200. L. Vilà-Nadal, E. F. Wilson, H. N. Miras, A. Rodríguez-Forteza, L. Cronin, J. M. Poblet, 'Combined Theoretical and Mass Spectrometry Study of the Formation-Fragmentation of Small Polyoxomolybdates', *Inorg. Chem.*, **2011**, *50*, 7811-7819.
199. M. F. Misdrabi, M. Wang, C. P. Pradeep, F.-Y. Li, C. Lydon, L. Xu, L. Cronin, T. Liu, 'Amphiphilic Properties of Dumbbell-Shaped Inorganic-Organic-Inorganic Molecular Hybrid Materials in Solution and at an Interface', *Langmuir*, **2011**, *27*, 9193-9202.
198. L. Cronin, P. J. Kitson, C. C. Wilson, 'Process Understanding – Crystallization', *Process Understanding: For Scale-Up and Manufacture of Active Ingredients*, **2011**, 199-227, Ed. I. Houson.
197. J. J. Walsh, D.-L. Long, L. Cronin, A. M. Bond, R. J. Forster, T. E. Keyes, 'Electronic and photophysical properties of adducts of $[Ru(bpy)_3]^{2+}$ and Dawson-type sulfite polyoxomolybdates α/β - $[Mo_{18}O_{54}(SO_3)_2]^{4-}$ ', *Dalton Trans.*, **2011**, *40*, 2038-2045.
196. M. N. Corella-Ochoa, H. N. Miras, A. Kidd, D.-L. Long, L. Cronin, 'Assembly of a family of mixed metal $\{Mo : V\}$ polyoxometalates templated by TeO_3^{2-} : $\{Mo_{12}V_{12}Te_3\}$, $\{Mo_{12}V_{12}Te_2\}$ and $\{Mo_{17}V_8Te\}$ ', *Chem. Commun.*, **2011**, *47*, 8799-8801.
195. J. Gao, J. Yan, S. G. Mitchell, H. N. Miras, A. G. Boulay, D.-L. Long, L. Cronin, 'Self-assembly of a family of macrocyclic polyoxotungstates with emergent material properties', *Chem. Sci.*, **2011**, *2*, 1502-1508.

194. G. N. Newton, T. Onuki, T. Shiga, M. Noguchi, T. Matsumoto, J. S. Mathieson, M. Nihei, M. Nakano, L. Cronin, H. Oshio, 'Mapping the Sequential Self-Assembly of Heterometallic Clusters: From a Helix to a Grid', *Angew. Chem. Int. Ed.*, **2011**, *50*, 4844-4848.
193. T. Akutagawa, F. Kudo, R. Tsunashima, S.-I. Noro, L. Cronin, T. Nakamura, 'Hydrogen-Bonded Assemblies of Two-Electron Reduced Mixed-Valence $[XMo_{12}O_{40}]$ ($X = P$ and Si) with *p*-Phenylenediamines', *Inorg. Chem.*, **2011**, *50*, 6711-6718.
192. C. P. Pradeep, F.-Y. Li, C. Lydon, H. N. Miras, D.-L. Long, L. Xu, L. Cronin, 'Design and Synthesis of "Dumb-bell" and "Triangular" Inorganic–Organic Hybrid Nanopolyoxometalate Clusters and Their Characterisation through ESI-MS Analyses', *Chem. Eur. J.*, **2011**, *17*, 7472-7479.
191. Y.-F. Song, D.-L. Long, C. Ritchie, L. Cronin, 'Nanoscale polyoxometalate-based inorganic/organic hybrids', *Chem. Rec.*, **2011**, *11*, 158-171.
190. T. McGlone, C. Streb, M. Busquets-Fité, J. Yan, D. Gabb, D.-L. Long, L. Cronin, 'Silver Linked Polyoxometalate Open Frameworks (Ag-POMOFs) for the Directed Fabrication of Silver Nanomaterials', *Cryst. Growth Des.*, **2011**, *11*, 2471-2478.
189. M. D. Symes, L. Cronin, 'The Crystal Computer: Computing with Inorganic Cellular Frameworks and Nets', *IJNMC*, **2011**, *3*, 24-34.
188. L. Cronin, 'Defining New Architectural Design Principles with 'Living' Inorganic Materials', *Archit Design*, **2011**, 34-43.
187. E. F. Wilson, H. N. Miras, M. H. Rosnes, L. Cronin, 'Real-Time Observation of the Self-Assembly of Hybrid Polyoxometalates Using Mass Spectrometry', *Angew. Chem. Int. Ed.*, **2011**, *50*, 3720-3724.
186. G. J. T. Cooper, A. G. Boulay, P. J. Kitson, C. Ritchie, C. J. Richmond, J. Thiel, D. Gabb, R. Eadie, D.-L. Long, L. Cronin, 'Osmotically Driven Crystal Morphogenesis: A General Approach to the Fabrication of Micrometer-Scale Tubular Architectures Based on Polyoxometalates', *J. Am. Chem. Soc.*, **2011**, *133*, 5947-5954.
185. F. Xu, R. A. Scullion, J. Yan, H. N. Miras, C. Busche, A. Scandurra, B. Pignataro, D.-L. Long, L. Cronin, 'A Supramolecular Heteropolyoxopalladate $\{Pd_{15}\}$ Cluster Host Encapsulating a $\{Pd_2\}$ Dinuclear Guest: $[Pd^{II}_2\{H_7Pd^{III}_5O_{10}(PO_4)_{10}\}]^{9-}$ ', *J. Am. Chem. Soc.*, **2011**, *133*, 4684-4686.
184. C. Musumeci, A. Luzio, C. P. Pradeep, H. N. Miras, M. H. Rosnes, Y.-F. Song, D.-L. Long, L. Cronin, B. Pignataro, 'Programmable Surface Architectures Derived from Hybrid Polyoxometalate-Based Clusters', *J. Phys. Chem. C*, **2011**, *115*, 4446-4455.
183. M. Hutin, D.-L. Long, L. Cronin, 'Controlling the Molecular Assembly of Polyoxometalates from the Nano to the Micron Scale: Molecules to Materials', *Isr. J. Chem.*, **2011**, *51*, 205-214.
182. S. G. Mitchell, T. Boyd, H. N. Miras, D.-L. Long, L. Cronin, 'Extended Polyoxometalate Framework Solids: Two Mn(II)-Linked $\{P_8W_{48}\}$ Network Arrays', *Inorg. Chem.*, **2011**, *50*, 136-143.
181. R. Tsunashima, D.-L. Long, T. Endo, S.-I. Noro, T. Akutagawa, T. Nakamura, R. Q. Cabrera, P. F. McMillan, P. Kögerler, L. Cronin, 'Exploring the thermochromism of sulfite-embedded polyoxometalate capsules', *Phys. Chem. Chem. Phys.*, **2011**, *13*, 7295-7297.
180. R. J. Cogdell, T. H. Brotsudarmo, A. T. Gardiner, P. M. Sanchez, L. Cronin, 'Artificial photosynthesis – solar fuels: current status and future prospects', *Biofuels*, **2010**, *1*, 861-876.
179. T. McGlone, L. Vilà-Nadal, H. N. Miras, D.-L. Long, J. M. Poblet, L. Cronin, 'Assembly of titanium embedded polyoxometalates with unprecedented structural features', *Dalton Trans.*, **2010**, *39*, 11599-11604.

178. T. McGlone, C. Streb, D.-L. Long, L. Cronin, 'Assembly of Pure Silver-Tungsten-Oxide Frameworks from Nanostructured Solution Processable Clusters and Their Evolution into Materials with a Metallic Component', *Adv. Mater.*, **2010**, *22*, 4275-4279.
177. M. H. Rosnes, C. Musumeci, C. P. Pradeep, J. S. Mathieson, D.-L. Long, Y.-F. Song, B. Pignataro, R. Cogdell, L. Cronin, 'Assembly of Modular Asymmetric Organic-Inorganic Polyoxometalate Hybrids into Anisotropic Nanostructures', *J. Am. Chem. Soc.*, **2010**, *132*, 15490-15492.
176. S. G. Mitchell, H. N. Miras, D.-L. Long, L. Cronin, 'A dimeric polyoxometalate sandwich motif containing a truncated {Mn₃O₄} cubane core', *Inorg. Chim. Acta*, **2010**, *363*, 4240-4246.
175. H. N. Miras, M. N. C. Ochoa, D.-L. Long, L. Cronin, 'Controlling transformations in the assembly of polyoxometalate clusters: {Mo₁₁V₇}, {Mo₁₇V₈} and {Mo₇₂V₃₀}', *Chem. Commun.*, **2010**, *46*, 8148-8150.
174. J. Zhang, Y.-F. Song, L. Cronin, T. B. Liu, 'Reverse-Vesicle Formation of Organic-Inorganic Polyoxometalate-Containing Hybrid Surfactants with Tunable Sizes', *Chem. Eur. J.*, **2010**, *16*, 11320-11324.
173. C. P. Pradeep, D.-L. Long, L. Cronin, 'Cations in control: crystal engineering polyoxometalate clusters using cation directed self-assembly', *Dalton Trans.*, **2010**, *39*, 9443-9457.
172. J. Thiel, C. Ritchie, H. N. Miras, C. Streb, S. G. Mitchell, T. Boyd, M. N. C. Ochoa, M. H. Rosnes, J. McIver, D.-L. Long, L. Cronin, 'Modular Inorganic Polyoxometalate Frameworks Showing Emergent Properties: Redox Alloys', *Angew. Chem. Int. Ed.*, **2010**, *49*, 6984-6988.
171. R. Q. Cabrera, D.-L. Long, L. Cronin, P. F. McMillan, 'In situ investigations of the polyoxometalate Trojan Horse compound K₇Na (W^{V18}O₅₆(SO₃)₂(H₂O)₂·20H₂O under high temperature and high pressure conditions', *CrystEngComm*, **2010**, *12*, 2568-2572.
170. G. Seeber, G. J. T. Cooper, G. N. Newton, M. H. Rosnes, D.-L. Long, B. M. Kariuki, P. Kögerler, L. Cronin, 'Following the self assembly of supramolecular MOFs using X-ray crystallography and cryospray mass spectrometry', *Chem. Sci.*, **2010**, *1*, 62-67.
169. J. Yan, J. Gao, D.-L. Long, H. N. Miras, L. Cronin, 'Self-Assembly of a Nanosized, Saddle-Shaped, Solution-Stable Polyoxometalate Anion Built from Pentagonal Building Blocks: [H₃₄W₁₁₉Se₈Fe₂O₄₂₀]⁵⁴⁻', *J. Am. Chem. Soc.*, **2010**, *132*, 11410-11411.
168. N. B. Ivanov, J. Schnack, R. Schnalle, J. Richter, P. Kögerler, G. N. Newton, L. Cronin, Y. Oshima, H. Nojiri, 'Heat Capacity Reveals the Physics of a Frustrated Spin Tube', *Phys. Rev. Lett.*, **2010**, *105*, 037206.
167. J. Yan, D.-L. Long, L. Cronin, 'Development of a Building Block Strategy To Access Gigantic Nanoscale Heteropolyoxotungstates by Using SeO₃²⁻ as a Template Linker', *Angew. Chem. Int. Ed.*, **2010**, *49*, 4117-4120.
166. T. Boyd, S. G. Mitchell, H. N. Miras, D.-L. Long, L. Cronin, 'Understanding and mapping the assembly of a family of trimeric polyoxometalates: transition metal mediated Wells-Dawson (M₁₈)-trimers', *Dalton Trans.*, **2010**, *39*, 6460-6465.
165. M. N. C. Ochoa, G. J. T. Cooper, G. N. Newton, D.-L. Long, G. Seeber, L. Cronin, 'Supramolecular Architectures of Copper(II) Perchlorate Complexes of *cis,trans*-1,3,5-Triaminocyclohexane Assembled Exploiting the Delicate Balance Between Weak and Strong Interactions', *Z. Naturforsch. B*, **2010**, *65*, 304-310.
164. T. Shiga, G. N. Newton, J. S. Mathieson, T. Tetsuka, M. Nihei, L. Cronin, H. Oshio, 'Ferromagnetically coupled chiral cyanide-bridged {Ni₆Fe₄} cages', *Dalton Trans.*, **2010**, *39*, 4730-4733.

163. J. Yan, D.-L. Long, H. N. Miras, L. Cronin, 'Cation Controlled Assembly and Transformation of Mono- and Bi-Sulfite Templated Dawson-Type Polyoxotungstates', *Inorg. Chem.*, **2010**, *49*, 1819-1825.
162. R. Tsunashima, D.-L. Long, H. N. Miras, D. Gabb, C. P. Pradeep, L. Cronin, 'The Construction of High-Nuclearity Isopolyoxoniobates with Pentagonal Building Blocks: $[\text{HNb}_{27}\text{O}_{76}]^{16-}$ and $[\text{H}_{10}\text{Nb}_{31}\text{O}_{93}(\text{CO}_3)]^{23-}$ ', *Angew. Chem. Int. Ed.*, **2010**, *49*, 113-116.
161. G. Pasparakis, N. Krasnogor, L. Cronin, B. G. Davis, C. Alexander, 'Controlled polymer synthesis-from biomimicry towards synthetic biology', *Chem. Soc. Rev.*, **2010**, *39*, 286-300.
160. Y.-F. Song, D.-L. Long, L. Cronin, 'Hybrid polyoxometalate clusters with appended aromatic platforms', *CrystEngComm*, **2010**, *12*, 109-115.
159. D.-L. Long, R. Tsunashima, L. Cronin, 'Polyoxometalates: Building Blocks for Functional Nanoscale Systems', *Angew. Chem. Int. Ed.*, **2010**, *49*, 1736-1758.
158. S. G. Mitchell, C. Streb, H. N. Miras, T. Boyd, D.-L. Long, L. Cronin, 'Face-directed self-assembly of an electronically active Archimedean polyoxometalate architecture', *Nature Chem.*, **2010**, *2*, 308-312.
157. H. N. Miras, G. J. T. Cooper, D.-L. Long, H. Bögge, A. Müller, C. Streb, L. Cronin, 'Unveiling the Transient Template in the Self-Assembly of a Molecular Oxide Nanowheel', *Science*, **2010**, *327*, 72-74.
156. S.-I. Noro, R. Tsunashima, Y. Kamiya, K. Uemura, H. Kita, L. Cronin, T. Akutagawa, T. Nakamura, 'Adsorption and Catalytic Properties of the Inner Nanospace of a Gigantic Ring-Shaped Polyoxometalate Cluster', *Angew. Chem. Int. Ed.*, **2009**, *48*, 8703-8706.
155. C. J. Richmond, R. M. Eadie, A. D. C. Parenty, L. Cronin, 'Fine Tuning Reactivity: Synthesis and Isolation of 1,2,3,12b-Tetrahydroimidazo[1,2-f]phenanthridines', *J. Org. Chem.*, **2009**, *74*, 8196-8202.
154. T. McGlone, C. Streb, D.-L. Long, L. Cronin, 'Guest-Directed Supramolecular Architectures of $\{\text{W}_{36}\}$ Polyoxometalate Crowns', *Chem. Asian. J.*, **2009**, *4*, 1612-1618.
153. G. J. T. Cooper, L. Cronin, 'How to sweet-talk bacteria', *Nature Chem.*, **2009**, *1*, 342-343.
152. H. Imai, T. Akutagawa, F. Kudo, M. Ito, K. Toyoda, S.-I. Noro, L. Cronin, T. Nakamura, 'Structure, Magnetism, and Ionic Conductivity of the Gigantic $\{\text{Mo}_{176}\}$ -Wheel Assembly: $\text{Na}_{15}\text{Fe}_3\text{Co}_{16}[\text{Mo}_{176}\text{O}_{528}\text{H}_3(\text{H}_2\text{O})_{80}]\text{Cl}_{27}\cdot 450\text{H}_2\text{O}$ ', *J. Am. Chem. Soc.*, **2009**, *131*, 13578-13579.
151. C. Streb, R. Tsunashima, D. A. MacLaren, T. McGlone, T. Akutagawa, T. Nakamura, A. Scandurra, B. Pignataro, N. Gadegaard, L. Cronin, 'Supramolecular Silver Polyoxometalate Architectures Direct the Growth of Composite Semiconducting Nanostructures', *Angew. Chem. Int. Ed.*, **2009**, *48*, 6490-6493.
150. C. P. Pradeep, M. F. Misdrahi, F. Y. Li, J. Zhang, L. Xu, D.-L. Long, T. B. Liu, L. Cronin, 'Synthesis of Modular "Inorganic-Organic-Inorganic" Polyoxometalates and Their Assembly into Vesicles', *Angew. Chem. Int. Ed.*, **2009**, *48*, 8309-8313.
149. E. K. Brechin, L. Cronin, 'The Marriage of Inorganic and Organic Building Blocks for the Assembly of Rotaxanes', *Angew. Chem. Int. Ed.*, **2009**, *48*, 6948-6949.
148. C. Ritchie, F. Y. Li, C. P. Pradeep, D.-L. Long, L. Xu, L. Cronin, 'A functional hybrid polyoxometalate framework based on a 'trilacunary' heteropolyanion $[(\text{P}_4\text{W}_6\text{O}_{34})_2\text{Co}_2\text{Na}_2(\text{H}_2\text{O})_2]^{18-}$ ', *Dalton Trans.*, **2009**, 6483-6486.
147. J. Fielden, D.-L. Long, L. Cronin, P. Kögerler, 'Synthesis of Cu(I) octamolybdates using *tetrakis*-acetonitrilecopper(I) hexafluorophosphate', *Polyhedron*, **2009**, *28*, 2803-2807.

146. P. J. Kitson, A. D. C. Parenty, C. J. Richmond, D.-L. Long, L. Cronin, 'A new C-C bond forming annulation reaction leading to pH switchable heterocycles', *Chem. Commun.*, **2009**, 4067-4069.
145. G. J. T. Cooper, L. Cronin, 'Real-Time Direction Control of Self Fabricating Polyoxometalate-Based Microtubes', *J. Am. Chem. Soc.*, **2009**, *131*, 8368-8369.
144. L. Vilà-Nadal, A. Rodríguez-Fortea, L. K. Yan, E. F. Wilson, L. Cronin, J. M. Poblet, 'Nucleation Mechanisms of Molecular Oxides: A Study of the Assembly-Dissassembly of $[W_6O_{19}]^{2-}$ by Theory and Mass Spectrometry', *Angew. Chem. Int. Ed.*, **2009**, *48*, 5452-5456.
143. M. Goral, T. McCormac, E. Dempsey, D.-L. Long, L. Cronin, A. M. Bond, 'Voltammetry of $[R_4N]_4[M_{18}O_{54}(SO_3)_2]$ and $[Ru(bpy)_3]_2[M_{18}O_{54}(SO_3)_2]$ ($M = Mo, W$) as microcrystals adhered to a glassy carbon electrode surface in contact with ionic liquid media', *Dalton Trans.*, **2009**, 6727-6735.
142. J. Yan, D.-L. Long, E. F. Wilson, L. Cronin, 'Discovery of Heteroatom-"Embedded" $Te\{W_{18}O_{54}\}$ Nanofunctional Polyoxometalates by Use of Cryospray Mass Spectrometry', *Angew. Chem. Int. Ed.*, **2009**, *48*, 4376-4380.
141. S. G. Mitchell, S. Khanra, H. N. Miras, T. Boyd, D.-L. Long, L. Cronin, 'The trinity of polyoxometalates: connecting $\{M_{12}\}$ Keggin and $\{M_{18}\}$ Dawson clusters to triangles', *Chem. Commun.*, **2009**, 2712-2714.
140. C. Ritchie, G. J. T. Cooper, Y.-F. Song, C. Streb, H. B. Yin, A. D. C. Parenty, D. A. MacLaren, L. Cronin, 'Spontaneous assembly and real-time growth of micrometre-scale tubular structures from polyoxometalate-based inorganic solids', *Nature Chem.*, **2009**, *1*, 47-52.
139. J. Thiel, C. Ritchie, C. Streb, D.-L. Long, L. Cronin, 'Heteroatom-Controlled Kinetics of Switchable Polyoxometalate Frameworks', *J. Am. Chem. Soc.*, **2009**, *131*, 4180-4181.
138. J. S. Mathieson, G. J. T. Cooper, A. L. Pickering, M. Keller, D.-L. Long, G. N. Newton, L. Cronin, 'Monitoring the Formation of Coordination Complexes Using Electrospray Mass Spectrometry', *Chem. Asian. J.*, **2009**, *4*, 681-687.
137. Y.-F. Song, N. McMillan, D.-L. Long, S. Kane, J. Malm, M. O. Riehle, C. P. Pradeep, N. Gadegaard, L. Cronin, 'Micropatterned Surfaces with Covalently Grafted Unsymmetrical Polyoxometalate-Hybrid Clusters Lead to Selective Cell Adhesion', *J. Am. Chem. Soc.*, **2009**, *131*, 1340-1341.
136. H. N. Miras, E. F. Wilson, L. Cronin, 'Unravelling the complexities of inorganic and supramolecular self-assembly in solution with electrospray and cryospray mass spectrometry', *Chem. Commun.*, **2009**, 1297-1311.
135. G. N. Newton, G. J. T. Cooper, D. Schuch, T. Shiga, S. Khanra, D.-L. Long, H. Oshio, L. Cronin, '*cis*-Tach based pentadecadentate ligands as building blocks in the synthesis of Fe^{III} and Pd^{II} coordination clusters', *Dalton Trans.*, **2009**, 1549-1553.
134. C. Ritchie, T. Boyd, D.-L. Long, E. Ditzel, L. Cronin, 'Grafting ligands to direct the self-assembly of Co/Ni^{2+} substituted polyoxometalate clusters', *Dalton Trans.*, **2009**, 1587-1592.
133. G. J. T. Cooper, G. N. Newton, D.-L. Long, P. Kögerler, M. H. Rosnes, M. Keller, L. Cronin, 'Exploring a Series of Isostructural Dodecanuclear Mixed Ni:Co Clusters: Toward the Control of Elemental Composition Using pH and Stoichiometry', *Inorg. Chem.*, **2009**, *48*, 1097-1104.
132. S. G. Mitchell, D. Gabb, C. Ritchie, N. Hazel, D.-L. Long, L. Cronin, 'Controlling nucleation of the cyclic heteropolyanion $\{P_8W_{48}\}$: a cobalt-substituted phosphotungstate chain and network', *CrystEngComm*, **2009**, *11*, 36-39.

131. C. P. Pradeep, D.-L. Long, C. Streb, L. Cronin, "'Bottom-Up" Meets "Top-Down" Assembly in Nanoscale Polyoxometalate Clusters: Self-Assembly of $[P_4W_{52}O_{178}]^{24-}$ and Disassembly to $[P_3W_{39}O_{134}]^{19-}$ ', *J. Am. Chem. Soc.*, **2008**, *130*, 14946-14947.
130. Y.-F. Song, D.-L. Long, S. E. Kelly, L. Cronin, 'Sorting the Assemblies of Unsymmetrically Covalently Functionalized Mn-Anderson Polyoxometalate Clusters with Mass Spectrometry', *Inorg. Chem.*, **2008**, *47*, 9137-9139.
129. J. Zhang, Y.-F. Song, L. Cronin, T. B. Liu, 'Self-Assembly of Organic-Inorganic Hybrid Amphiphilic Surfactants with Large Polyoxometalates as Polar Head Groups', *J. Am. Chem. Soc.*, **2008**, *130*, 14408-14409.
128. C. Streb, T. McGlone, O. Brücher, D.-L. Long, L. Cronin, 'Hybrid Host-Guest Complexes: Directing the Supramolecular Structure through Secondary Host-Guest Interactions', *Chem. Eur. J.*, **2008**, *14*, 8861-8868.
127. H. N. Miras, D. J. Stone, E. J. L. McInnes, R. G. Raptis, P. Baran, G. I. Chilas, M. P. Sigalas, T. A. Kabanos, L. Cronin, 'Solution identification and solid state characterisation of a heterometallic polyoxometalate $\{Mo_{11}V_7\}$: $[Mo^{VI}_{11}V^{V5}V^{IV2}O_{52}(\mu_9-SO_3)]^{7-}$ ', *Chem. Commun.*, **2008**, 4703-4705.
126. C. Ritchie, C. Streb, J. Thiel, S. G. Mitchell, H. N. Miras, D.-L. Long, T. Boyd, R. D. Peacock, T. McGlone, L. Cronin, 'Reversible redox reactions in an extended polyoxometalate framework solid', *Angew. Chem. Int. Ed.*, **2008**, *47*, 6881-6884.
125. C. J. Richmond, A. D. C. Parenty, Y.-F. Song, G. Cooke, L. Cronin, 'Realization of a "Lockable" molecular switch via pH- and redox-modulated cyclization', *J. Am. Chem. Soc.*, **2008**, *130*, 13059-13065.
124. C. Ritchie, A. Ferguson, H. Nojiri, H. N. Miras, Y.-F. Song, D.-L. Long, E. Burkholder, M. Murrie, P. Kögerler, E. K. Brechin, L. Cronin, 'Polyoxometalate-mediated self-assembly of single-molecule magnets: $\{[XW_9O_{34}]_2[Mn^{III4}Mn^{II2}O_4(H_2O)_4]\}^{12-}$ ', *Angew. Chem. Int. Ed.*, **2008**, *47*, 5609-5612.
123. Y.-F. Song, P. J. Kitson, D.-L. Long, A. D. C. Parenty, R. J. Thatcher, L. Cronin, 'Supramolecular self-assembly and anion-dependence of copper(II) complexes with cationic dihydro-imidazo phenanthridinium (DIP)-containing ligands', *CrystEngComm*, **2008**, *10*, 1243-1251.
122. H. N. Miras, J. Yan, D.-L. Long, L. Cronin, 'Structural Evolution of "S"-Shaped $[H_4W_{22}O_{74}]^{12-}$ and "S"-Shaped $[H_{10}W_{34}O_{116}]^{18-}$ Isopolyoxotungstate Clusters', *Angew. Chem. Int. Ed.*, **2008**, *47*, 8420-8423.
121. E. F. Wilson, H. Abbas, B. J. Duncombe, C. Streb, D.-L. Long, L. Cronin, 'Probing the self-assembly of inorganic cluster architectures in solution with cryospray mass spectrometry: Growth of polyoxomolybdate clusters and polymers mediated by silver(I) ions', *J. Am. Chem. Soc.*, **2008**, *130*, 13876-13884.
120. C. Fleming, D.-L. Long, N. Mcmillan, J. Johnston, N. Bovet, V. Dhanak, N. Gadegaard, P. Kögerler, L. Cronin, M. Kadodwala, 'Reversible electron-transfer reactions within a nanoscale metal oxide cage mediated by metallic substrates', *Nature Nano.*, **2008**, *3*, 229-233.
119. Y.-F. Song, L. Cronin, 'Postsynthetic covalent modification of metal-organic framework (MOF) materials', *Angew. Chem. Int. Ed.*, **2008**, *47*, 4635-4637.
118. D.-L. Long, Y.-F. Song, E. F. Wilson, P. Kögerler, S. X. Guo, A. M. Bond, J. S. J. Hargreaves, L. Cronin, 'Capture of periodate in a $\{W_{18}O_{54}\}$ cluster cage yielding a catalytically active polyoxometalate $[H_3W_{18}O_{56}(IO_6)]^{6-}$ embedded with high-valent iodine', *Angew. Chem. Int. Ed.*, **2008**, *47*, 4384-4387.
117. C. P. Pradeep, D.-L. Long, G. N. Newton, Y.-F. Song, L. Cronin, 'Supramolecular metal oxides: Programmed hierarchical assembly of a protein-sized 21 kDa $[(C_{16}H_{36}N)_{19}\{H_2NC(CH_2O)_3P_2V_3W_{15}O_{59}\}_4]^{5-}$ polyoxometalate assembly', *Angew. Chem. Int. Ed.*, **2008**, *47*, 4388-4391.

116. M. Rancan, G. N. Newton, C. A. Muryn, R. G. Pritchard, G. A. Timco, L. Cronin, R. E. P. Winpenny, 'Chemistry and supramolecular chemistry of chromium horseshoes', *Chem. Commun.*, **2008**, 1560-1562.
115. T. Akutagawa, D. Endo, F. Kudo, S.-I. Noro, S. Takeda, L. Cronin, T. Nakamura, 'A solid-state supramolecular rotator assembled from a Cs-crown ether polyoxometalate hybrid: $(\text{Cs}^+)_3([\text{18}]\text{crown-6})_3(\text{H}^+)_2[\text{PMo}_{12}\text{O}_{40}]$ ', *Cryst. Growth Des.*, **2008**, *8*, 812-816.
114. H. N. Miras, L. Cronin, 'Polyoxometalate Nanocapsules: From Structure to Function', *Organic Nanostructures*, **2008**, Ed. J. Atwood, J. Steed.
113. Y.-F. Song, N. McMillan, D.-L. Long, J. Thiel, Y. L. Ding, H. S. Chen, N. Gadegaard, L. Cronin, 'Design of hydrophobic polyoxometalate hybrid assemblies beyond surfactant encapsulation', *Chem. Eur. J.*, **2008**, *14*, 2349-2354.
112. P. J. Kitson, Y.-F. Song, P. Gamez, P. de Hoog, D.-L. Long, A. D. C. Parenty, J. Reedijk, L. Cronin, 'Metal-mediated transformation of a triazinephenanthridinium ligand leading to a $\{\text{Pd}_5\}$ coordination complex observed crystallographically and by cryospray mass Spectrometry', *Inorg. Chem.*, **2008**, *47*, 1883-1885.
111. L. Cronin, 'Molecular Metal Oxides and Clusters as Building Blocks for Functional Nanoscale Architectures and Potential Nanosystems', *Tomorrow's Chemistry Today*, **2008**, Ed. B. Pignataro.
110. D.-L. Long, C. Streb, Y.-F. Song, S. Mitchell, L. Cronin, 'Unravelling the complexities of polyoxometalates in solution using mass spectrometry: Protonation versus heteroatom inclusion', *J. Am. Chem. Soc.*, **2008**, *130*, 1830-1832.
109. A. D. C. Parenty, L. Cronin, 'One-pot synthesis of imidazopyridine derivatives', *Synthesis*, **2008**, 1479-1485.
108. G. N. Newton, G. J. T. Cooper, P. Kögerler, D.-L. Long, L. Cronin, 'Trading templates: Supramolecular transformations between $\{\text{Co}^{\text{II13}}\}$ and $\{\text{Co}^{\text{II12}}\}$ nanoclusters', *J. Am. Chem. Soc.*, **2008**, *130*, 790-791.
107. S. G. Mitchell, C. Ritchie, D.-L. Long, L. Cronin, 'Isolation of extendable transition metal incorporated polyoxometalate intermediates with structural control', *Dalton Trans.*, **2008**, 1415-1417.
106. H. Abbas, C. Streb, A. L. Pickering, A. R. Neil, D.-L. Long, L. Cronin, 'Molecular growth of polyoxometalate Architectures based on $[-\text{Ag}\{\text{Mo}_8\}\text{Ag}-]$ synthons: Toward designed cluster assemblies', *Cryst. Growth Des.*, **2008**, *8*, 635-642.
105. T. Akutagawa, R. Jin, R. Tunashima, S.-I. Noro, L. Cronin, T. Nakamura, 'Nanoscale assemblies of gigantic molecular $\{\text{Mo}_{154}\}$ -rings: $(\text{Dimethyldioctadecylammonium})_{20}[\text{Mo}_{154}\text{O}_{462}\text{H}_8(\text{H}_2\text{O})_{70}]$ ', *Langmuir*, **2008**, *24*, 231-238.
104. H. N. Miras, D.-L. Long, P. Kögerler, L. Cronin, 'Bridging the gap between solution and solid state studies in polyoxometalate chemistry: Discovery of a family of $[\text{V}_1\text{M}_{17}]$ -based cages encapsulating two $\{\text{V}^{\text{V}}\text{O}_4\}$ moieties', *Dalton Trans.*, **2008**, 214-221.
103. A. D. C. Parenty, L. Cronin, 'One-pot synthesis of dihydroimidazo- and imidazophenanthridinium salts', *Synthesis*, **2008**, 155-160.
102. T. Akutagawa, D. Endo, S.-I. Noro, L. Cronin, T. Nakamura, 'Directing organic-inorganic hybrid molecular-assemblies of polyoxometalate crown-ether complexes with supramolecular cations', *Coord. Chem. Rev.*, **2007**, *251*, 2547-2561.
101. J. Fielden, D.-L. Long, A. M. Z. Slawin, P. Kögerler, L. Cronin, 'Ligand and counterion control of $\text{Ag}(\text{I})$ architectures: Assembly of a $\{\text{Ag}_8\}$ ring cluster mediated by hydrophobic and $\text{Ag}\cdots\text{Ag}$ interactions', *Inorg. Chem.*, **2007**, *46*, 9090-9097.
100. C. Baffert, S. W. Feldberg, A. M. Bond, D.-L. Long, L. Cronin, 'pH-Dependence of the aqueous electrochemistry of the two-electron reduced α - $[\text{Mo}_{18}\text{O}_{54}(\text{SO}_3)]$ sulfite Dawson-like polyoxometalate anion derived from its triethanolammonium salt', *Dalton Trans.*, **2007**, 4599-4607.

99. C. Streb, C. Ritchie, D.-L. Long, P. Kögerler, L. Cronin, 'Modular assembly of a functional polyoxometalate-based open framework constructed from unsupported Ag⁺...Ag⁺ interactions', *Angew. Chem. Int. Ed.*, **2007**, *46*, 7579-7582.
98. C. P. Pradeep, D.-L. Long, P. Kögerler, L. Cronin, 'Controlled assembly and solution observation of a 2.6 nm polyoxometalate 'super' tetrahedron cluster: [KFe₁₂(OH)₁₈(α-1,2,3-P₂W₁₅O₅₆)₄]²⁹⁻', *Chem. Commun.*, **2007**, 4254-4256.
97. Y.-F. Song, H. Abbas, C. Ritchie, N. McMillan, D.-L. Long, N. Gadegaard, L. Cronin, 'From polyoxometalate building blocks to polymers and materials: the silver connection', *J. Mater. Chem.*, **2007**, *17*, 1903-1908.
96. A. D. C. Parenty, Y.-F. Song, C. J. Richmond, L. Cronin, 'A general and efficient five-step one-pot procedure leading to nitrogen-bridgehead heterocycles containing an imidazole ring', *Org. Lett.*, **2007**, *9*, 2253-2256.
95. Y.-F. Song, D.-L. Long, L. Cronin, 'Noncovalently connected frameworks with nanoscale channels assembled from a tethered polyoxometalate-pyrene hybrid', *Angew. Chem. Int. Ed.*, **2007**, *46*, 3900-3904.
94. N. McMillan, L. V. Smith, J. M. de la Fuente, A. D. C. Parenty, N. Gadegaard, A. R. Pitt, K. Thomson, C. MacKenzie, S. M. Kelly, L. Cronin, 'Incorporation of N-heterocyclic cations into proteins with a highly directed chemical modification', *Chem. Commun.*, **2007**, 2581-2583.
93. C. P. Pradeep, L. Cronin, 'Supramolecular coordination chemistry', *Annu. Rep. Prog. Chem., Sect. A: Inorg. Chem.*, **2007**, *103*, 287-332.
92. N. Fay, A. M. Bond, C. Baffert, J. F. Boas, J. R. Pilbrow, D.-L. Long, L. Cronin, 'Structural, electrochemical, and spectroscopic characterization of a redox pair of sulfite-based polyoxotungstates: α-[W₁₈O₅₄(SO₃)₂]₄⁻ and α-[W₁₈O₅₄(SO₃)₂]₅⁻', *Inorg. Chem.*, **2007**, *46*, 3502-3510.
91. D.-L. Long, E. Burkholder, L. Cronin, 'Polyoxometalate clusters, nanostructures and materials: From self assembly to designer materials and devices', *Chem. Soc. Rev.*, **2007**, *36*, 105-121.
90. K. M. Guthrie, A. D. C. Parenty, L. V. Smith, L. Cronin, A. Cooper, 'Microcalorimetry of interaction of dihydro-imidazophenanthridinium (DIP)-based compounds with duplex DNA', *Biophys. Chem.*, **2007**, *126*, 117-123.
89. G. J. T. Cooper, G. N. Newton, P. Kögerler, D.-L. Long, L. Engelhardt, M. Luban, L. Cronin, 'Structural and compositional control in {M₁₂} cobalt and nickel coordination clusters detected magnetochemically and with cryospray mass spectrometry', *Angew. Chem. Int. Ed.*, **2007**, *46*, 1340-1344.
88. C. Ritchie, E. M. Burkholder, D.-L. Long, D. Adam, P. Kögerler, L. Cronin, 'Exploiting the multifunctionality of organocations in the assembly of hybrid polyoxometalate clusters and networks', *Chem. Commun.*, **2007**, 468-470.
87. C. Streb, D.-L. Long, L. Cronin, 'Engineering porosity in a chiral heteropolyoxometalate-based framework: the supramolecular effect of benzenetricarboxylic acid', *Chem. Commun.*, **2007**, 471-473.
86. H. Abbas, L. Cronin, 'Nanoscale Chemistry: A Route Towards Molecular Computers and Devices?', *Education in Chemistry*, **2007**.
85. L. Cronin, N. Krasnogor, B. G. Davis, C. Alexander, N. Robertson, J. H. G. Steinke, S. L. M. Schroeder, A. N. Khlobystov, G. Cooper, P. M. Gardner, P. Siepmann, B. J. Whitaker, D. Marsh, 'The imitation game - a computational chemical approach to recognizing life', *Nature Biotech.*, **2006**, *24*, 1203-1206.
84. T. Akutagawa, D. Endo, H. Imai, S.-I. Noro, L. Cronin, T. Nakamura, 'Formation of *p*-phenylenediamine-crown ether-[PMo₁₂O₄₀]⁴⁻ salts', *Inorg. Chem.*, **2006**, *45*, 8628-8637.

83. J. Fielden, P. T. Gunning, D.-L. Long, M. Nutley, A. Ellern, P. Kögerler, L. Cronin, 'Anion control of isomerism, crystal packing and binding properties in a mononuclear zinc complex', *Polyhedron*, **2006**, *25*, 3474-3480.
82. L. V. Smith, A. D. C. Parenty, K. M. Guthrie, J. Plumb, R. Brown, L. Cronin, 'Dihydroimidazophenanthridinium (DIP)-based DNA binding agents with tuneable structures and biological activity', *ChemBioChem*, **2006**, *7*, 1757-1763.
81. C. Streb, D.-L. Long, L. Cronin, 'Influence of organic amines on the self-assembly of hybrid polyoxomolybdenum(V) phosphate frameworks', *CrystEngComm*, **2006**, *8*, 629-634.
80. D.-L. Long, P. Kögerler, L. J. Farrugia, L. Cronin, 'Linking chiral clusters with molybdate building blocks: From homochiral helical supramolecular arrays to coordination helices', *Chem. Asian. J.*, **2006**, *1*, 352-357.
79. J. Fielden, D.-L. Long, C. Evans, L. Cronin, 'Metal-dependent formation of mononuclear complexes and M_2L_2 mesocates with Schiff-base ligands', *Eur. J. Inorg. Chem.*, **2006**, 3930-3935.
78. L. Cronin, 'Supramolecular Coordination Chemistry', *Annu. Rep. Prog. Chem., Sect. A: Inorg. Chem.*, **2006**, *102*, 353-378.
77. D.-L. Long, P. Kögerler, A. D. C. Parenty, J. Fielden, L. Cronin, 'Discovery of a family of isopolyoxotungstates $[H_4W_{19}O_{62}]^{6-}$ encapsulating a $\{WO_6\}$ moiety within a $\{W_{18}\}$ Dawson-like cluster cage', *Angew. Chem. Int. Ed.*, **2006**, *45*, 4798-4803.
76. C. Baffert, J. F. Boas, A. M. Bond, P. Kögerler, D.-L. Long, J. R. Pilbrow, L. Cronin, 'Experimental and theoretical investigations of the sulfite-based polyoxometalate cluster redox series: α - and β - $[Mo_{18}O_{54}(SO_3)_2]^{4-/5-/6-}$ ', *Chem. Eur. J.*, **2006**, *12*, 8472-8483.
75. D.-L. Long, O. Brücher, C. Streb, L. Cronin, 'Inorganic crown: the host-guest chemistry of a high nuclearity 'celtic-ring' isopolyoxotungstate $[H_{12}W_{36}O_{120}]^{12-}$ ', *Dalton Trans.*, **2006**, 2852-2860.
74. G. N. Newton, J. T. C. Geoffrey, D.-L. Long, P. Kögerler, L. Cronin, 'Synthetic, structural and magnetic characterisation of a one-dimensional nickel chain constructed using *cis,trans*-1,3,5-triaminocyclohexane as a building block', *J. Mol. Struct.*, **2006**, *796*, 23-27.
73. D.-L. Long, C. Streb, P. Kögerler, L. Cronin, 'Observation and theoretical analysis of the "sensitive coordination sites" in the isopolyoxomolybdate cluster $[Mo_{36}O_{112}(H_2O)_{14}]^{8-}$ ', *J. Clust. Sci.*, **2006**, *17*, 257-266.
72. D.-L. Long, L. Cronin, 'Towards polyoxometalate-integrated nanosystems', *Chem. Eur. J.*, **2006**, *12*, 3699-3706.
71. A. D. C. Parenty, K. M. Guthrie, Y.-F. Song, L. V. Smith, E. Burkholder, L. Cronin, 'One-Pot Synthesis of Imidazophenanthridinium Salts', *Synfacts*, **2006**, *2006*, 2.
70. C. Ritchie, E. Burkholder, P. Kögerler, L. Cronin, 'Unsymmetrical surface modification of a heteropolyoxotungstate via in-situ generation of monomeric and dimeric copper(II) species', *Dalton Trans.*, **2006**, 1712-1714.
69. J. Fielden, Y. L. Malaestean, A. Ellern, R. García-Serres, L. Cronin, P. Kögerler, 'Inducing molecular growth in an $\{Mo_{57}Fe_6\}$ -type nanocluster: Synthesis, structure, and properties of $\{Mo_{57}(Mo)_2Fe_6^{III}\}$ ', *J. Clust. Sci.*, **2006**, *17*, 291-302.
68. L. Cronin, 'Inorganic molecular capsules: From structure to function', *Angew. Chem. Int. Ed.*, **2006**, *45*, 3576-3578.
67. A. D. C. Parenty, K. M. Guthrie, Y.-F. Song, L. V. Smith, E. Burkholder, L. Cronin, 'Discovery of an imidazo-phenanthridine synthon produced in a 'five-step one-pot reaction' leading to a new family of heterocycles with novel physical properties', *Chem. Commun.*, **2006**, 1194-1196.

66. J. Fielden, J. Sprott, D.-L. Long, P. Kögerler, L. Cronin, 'Controlling aggregation of copper(II)-based coordination compounds: From mononuclear to dinuclear, tetranuclear, and polymeric copper complexes', *Inorg. Chem.*, **2006**, *45*, 2886-2895.

65. A. Parenty, L. Cronin, R. Brown. 'Preparation imidazophenanthridiniums and related compounds as anticancer agents'. Application: WO

WO patent 2004-GB5004

2005054241, **2005**

64. R. D. L. Rue, M. Sorel, N. Johnson, F. Rahman, C. Ironside, L. Cronin, I. Watson, R. Martin, C. Jin, P. Pottier, H. Chong, M. Gnan, Jugessur A, E. Camargo, G. Erwin, Z. A. mD., I. Ntakis, L. Hobbs, H. Zhang, M. Armensie, C. Ciminelli, D. Coquillat, 'Photonic crystal and photonic wire device structures', *The International Society for Optical Engineering*, **2005**, 595004/595001-595004/595012.

63. A. L. Pickering, G. Seeber, D.-L. Long, L. Cronin, 'The importance of π - π , π -CH and N-CH interactions in the crystal packing of Schiff-base derivatives of *cis,cis*- and *cis,trans*-1,3,5-triaminocyclohexane', *CrystEngComm*, **2005**, *7*, 504-510.

62. L. V. Smith, J. M. de la Fuente, K. M. Guthrie, A. D. C. Parenty, L. Cronin, 'Does it bind? An instant binding assay for DNA oligonucleotide interactive small molecules', *New J. Chem.*, **2005**, *29*, 1118-1120.

61. J. Fielden, L. Cronin, 'Coordination Clusters', *Encyclopedia of Supramolecular Chemistry*, **2005**, 1-10.

60. J. M. de la Fuente, M. Fandel, C. C. Berry, M. Riehle, L. Cronin, G. Aitchison, A. S. G. Curtis, 'Quantum dots protected with tiopronin: A new fluorescence system for cell-biology studies', *ChemBioChem*, **2005**, *6*, 989-991.

59. L. Cronin, 'Supramolecular coordination chemistry', *Annu. Rep. Prog. Chem., Sect. A: Inorg. Chem.*, **2005**, *101*, 348-374.

58. J. Fielden, J. Sprott, L. Cronin, 'Design and stereospecific synthesis of modular ligands based upon *cis*-1,3-*trans*-5-substituted cyclohexanes', *New J. Chem.*, **2005**, *29*, 1152-1158.

57. A. D. C. Parenty, L. V. Smith, L. Cronin, 'An unusual substitution reaction directed by an intramolecular re-arrangement', *Tetrahedron*, **2005**, *61*, 8410-8418.

56. L. Cronin, 'Macrocyclic coordination chemistry', *Annu. Rep. Prog. Chem., Sect. A: Inorg. Chem.*, **2005**, *101*, 319-347.

55. G. J. T. Cooper, D.-L. Long, L. Cronin, 'A novel copper (II) metallacycle as a building block for the assembly of an extended supramolecular array containing channels and helical chains', *Inorg. Chem. Commun.*, **2005**, *8*, 737-739.

54. A. D. C. Parenty, L. V. Smith, K. M. Guthrie, D.-L. Long, J. Plumb, R. Brown, L. Cronin, 'Highly stable phenanthridinium frameworks as a new class of tunable DNA binding agents with cytotoxic properties', *J. Med. Chem.*, **2005**, *48*, 4504-4506.

53. G. Seeber, B. M. Kariuki, L. Cronin, P. Kögerler, 'Synthesis, structure and magnetism of a linear Cu-Cl-Cu entity found in $[(\text{Cu}(\text{tachH})(\text{tach}))_2(\mu\text{-Cl})]^{5+}$ ', *Polyhedron*, **2005**, *24*, 1651-1655.

52. D.-L. Long, H. Abbas, P. Kögerler, L. Cronin, 'Confined electron-transfer reactions within a molecular metal oxide "Trojan horse"', *Angew. Chem. Int. Ed.*, **2005**, *44*, 3415-3419.

51. P. Kögerler, L. Cronin, 'Polyoxometalate nanostructures, superclusters, and colloids: From functional clusters to chemical aesthetics', *Angew. Chem. Int. Ed.*, **2005**, *44*, 844-846.

50. D.-L. Long, P. Kögerler, L. J. Farrugia, L. Cronin, 'Reactions of a {Mo₁₆} type polyoxometalate cluster with electrophiles: a synthetic, theoretical and magnetic investigation', *Dalton Trans.*, **2005**, 1372-1380.
49. H. Abbas, A. L. Pickering, D.-L. Long, P. Kögerler, L. Cronin, 'Controllable growth of chains and grids from polyoxomolybdate building blocks linked by silver(I) dimers', *Chem. Eur. J.*, **2005**, *11*, 1071-1078.
48. D.-L. Long, H. Abbas, P. Kögerler, L. Cronin, 'A high-nuclearity "Celtic-Ring" isopolyoxotungstate, [H₁₂W₃₆O₁₂₀] that captures trace potassium ions', *J. Am. Chem. Soc.*, **2004**, *126*, 13880-13881.
47. L. Cronin, P. A. McGregor, S. Parsons, S. Teat, R. O. Gould, V. A. White, N. J. Long, N. Robertson, 'Synthesis, structure, and complexation of a large 28-mer macrocycle containing two binding sites for either anions or metal ions', *Inorg. Chem.*, **2004**, *43*, 8023-8029.
46. G. J. T. Cooper, H. Abbas, P. Kögerler, D.-L. Long, L. Cronin, 'Pentadecadentate chelating ligands as building blocks for a {Fe₆} cage with 12 exo-coordinated sodium cations', *Inorg. Chem.*, **2004**, *43*, 7266-7268.
45. J. Schnack, H. Nojiri, P. Kögerler, G. J. T. Cooper, L. Cronin, 'Magnetic characterization of the frustrated three-leg ladder compound [(CuCl₂tachH)₃Cl]Cl₂', *Phys. Rev. B*, **2004**, *70*, 174420.
44. D.-L. Long, P. Kögerler, L. Cronin, 'Old clusters with new tricks: Engineering S...S interactions and novel physical properties in sulfite-based dawson clusters', *Angew. Chem. Int. Ed.*, **2004**, *43*, 1817-1820.
43. A. D. C. Parenty, L. V. Smith, A. L. Pickering, D.-L. Long, L. Cronin, 'General one-pot, three-step methodology leading to an extended class of N-heterocyclic cations: Spontaneous nucleophilic addition, cyclization, and hydride loss', *J. Org. Chem.*, **2004**, *69*, 5934-5946.
42. A. L. Pickering, G. J. T. Cooper, D.-L. Long, L. Cronin, 'Facile synthesis and structures of infinite one-dimensional silver(I) coordination polymers', *Polyhedron*, **2004**, *23*, 2075-2079.
41. A. L. Pickering, D.-L. Long, L. Cronin, 'Coordination networks through the dimensions: From discrete clusters to 1D, 2D, and 3D silver(I) coordination polymers with rigid aliphatic amino ligands', *Inorg. Chem.*, **2004**, *43*, 4953-4961.
40. J. Fielden, D.-L. Long, L. Cronin, 'Secondary coordination sphere controlled reversible geometry reorganisations in copper(II) complexes', *Chem. Commun.*, **2004**, 2156-2157.
39. G. Seeber, P. Kögerler, B. M. Kariuki, L. Cronin, 'Supramolecular assembly of ligand-directed triangular {Cu^{II}Cl} clusters with spin frustration and spin-chain behaviour', *Chem. Commun.*, **2004**, 1580-1581.
38. A. L. Pickering, G. Seeber, D.-L. Long, L. Cronin, 'Polymeric silver(I) coordination tubes', *Chem. Commun.*, **2004**, 136-137.
37. A. L. Pickering, L. Cronin, 'DNA as a Supramolecular Scaffold', *Encyclopedia of Supramolecular Chemistry*, **2004**, 457-474, Ed. J. L. Atwood, J. W. Steed.
36. L. Cronin, 'High nuclearity clusters: iso and heteropolyoxoanions and relatives', *Comprehensive Coordination Chemistry II* Vol. 7, **2004**, 1-56, Ed. J. A. McCleverty, J. T. Meyer.
35. L. Cronin, 'Macrocyclic and supramolecular coordination chemistry', *Annu. Rep. Prog. Chem., Sect. A: Inorg. Chem.*, **2004**, *100*, 323-383.
34. G. Seeber, D.-L. Long, B. M. Kariuki, L. Cronin, 'Palladium(II)-based *cis,trans*-1,3,5-triaminocyclohexane complexes demonstrating a variety of coordination modes and architectures', *Dalton Trans.*, **2003**, 4498-4504.

33. L. Cronin, 'Macrocyclic and supramolecular coordination chemistry', *Annu. Rep. Prog. Chem., Sect. A: Inorg. Chem.*, **2003**, 99, 289-347.
32. D.-L. Long, D. Orr, G. Seeber, P. Kögerler, L. J. Farrugia, L. Cronin, 'The missing link in low nuclearity pure polyoxovanadate clusters: Preliminary synthesis and structural analysis of a new $\{V_{16}\}$ cluster and related products', *J. Clust. Sci.*, **2003**, 14, 313-324.
31. L. Cronin, P. H. Walton, 'Synthesis and structure of $[Zn(OMe)(L)] \cdot [Zn(OH)(L)] \cdot (BPh_4)$, L = *cis,cis*-1,3,5-tris[(*E,E*)-3-(2-furyl)acrylideneamino] cyclohexane: structural models of carbonic anhydrase and liver alcohol dehydrogenase', *Chem. Commun.*, **2003**, 1572-1573.
30. D.-L. Long, P. Kögerler, L. J. Farrugia, L. Cronin, 'Restraining symmetry in the formation of small polyoxomolybdates: Building blocks of unprecedented topology resulting from "shrink-wrapping" $[H_2Mo_{16}O_{52}]^{10-}$ -type clusters', *Angew. Chem. Int. Ed.*, **2003**, 42, 4180-4183.
29. G. Seeber, A. L. Pickering, D.-L. Long, L. Cronin, 'Controlling dimensionality of silver(I) coordination networks with rigid aliphatic amino ligands: from a 2D to a 3D network of unprecedented topology comprising helical channels', *Chem. Commun.*, **2003**, 2002-2003.
28. L. Cronin, 'Polyoxomolybdate Clusters: Nanoscopic Wheels and Balls', *Inorganic Experiments*, **2003**, 340-346, Ed. Woollins J. D.
27. G. Seeber, B. Kariuki, L. Cronin, 'Self-assembly of a twelve-component hexanuclear metallomacrocyclic constructed with a novel tri-amino ligand', *Chem. Commun.*, **2002**, 2912-2913.
26. V. Shivaiah, P. V. N. Reddy, L. Cronin, S. K. Das, 'A novel polyoxometalate chain formed from heteropolyanion building blocks and rare earth metal ion linkers: $[La(H_2O)_7Al(OH)_6Mo_6O_{18}]_n \cdot 4nH_2O$ ', *Dalton Trans.*, **2002**, 3781-3782.
25. L. Cronin, C. Beugholt, E. Krickemeyer, M. Schmidtman, H. Bögge, P. Kögerler, T. K. K. Luong, A. Müller, "'Molecular symmetry breakers" generating metal-oxide-based nanoobject fragments as synthons for complex structures: $[\{Mo_{128}Eu_4O_{388}H_{10}(H_2O)_{81}\}_2]^{20-}$, a giant-cluster dimer', *Angew. Chem. Int. Ed.*, **2002**, 41, 2805-2808.
24. N. Robertson, L. Cronin, 'Metal bis-1,2-dithiolene complexes in conducting or magnetic crystalline assemblies', *Coord. Chem. Rev.*, **2002**, 227, 93-127.
23. L. Cronin, D. Fenske, A. Müller, 'Nanosized Inorganic Clusters', *Encyclopedia of Physical Science and Technology* Vol. 10, **2002**, 303-317.
22. L. Cronin, 'The potential of pentagonal building blocks: From giant ring-shaped to spherical polyoxometalate clusters', *Inorganic Chemistry Highlights*, **2002**, 113-121, Ed. G. Meyer, D. Neumann, L. Wesemann.
21. L. Cronin, S. P. Foxon, P. J. Lusby, P. H. Walton, 'Syntheses and structures of $M(L)(X)BPh_4$ complexes $\{M = Co(II), Zn(II); L = cis-1,3,5-tris[3-(2-furyl)prop-2-enylideneamino]cyclohexane, X = OAc, NO_3\}$: structural models of the active site of carbonic anhydrase', *J. Biol. Inorg. Chem.*, **2001**, 6, 367-377.
20. T. Braun, L. Cronin, C. L. Higgitt, J. E. McGrady, R. N. Perutz, M. Reinhold, 'Coordination and oxidative addition of octafluoronaphthalene at a nickel centre: isolation of an intermediate in C-F bond activation', *New J. Chem.*, **2001**, 25, 19-21.
19. L. Cronin, S. J. Clark, S. Parsons, T. Nakamura, N. Robertson, 'Unique structural topologies involving metal-metal and metal-sulfur interactions: salts of $[Ni(C_3S_5)_2]^x$ with *cis-anti-cis*-dicyclohexyl-18-crown-6 complexed counter ions', *Dalton Trans.*, **2001**, 1347-1351.

18. L. Cronin, C. Beugholt, A. Müller, 'Towards the construction of mesoscopic species with emergent and functional properties via the derivatisation of molybdenum-oxide 'Giant-Wheel' clusters', *J. Mol. Struct. THEOCHEM*, **2000**, *500*, 181-193.
17. L. Cronin, P. Kögerler, A. Müller, 'Controlling growth of novel solid-state materials via discrete molybdenum-oxide-based building blocks as synthons', *J. Solid State Chem.*, **2000**, *152*, 57-67.
16. L. Cronin, D. A. Adams, D. J. Nightingale, J. H. Clark, '4-chloro-N-(4-cyano-2-nitrophenyl)-3-nitrobenzamide', *Acta Crystallogr. C*, **2000**, *56*, 244-245.
15. L. Cronin, C. L. Higgitt, R. N. Perutz, 'Structure and dynamic exchange in rhodium η^2 -naphthalene and rhodium η^2 -phenanthrene complexes: Quantitative NOESY and EXSY studies', *Organometallics*, **2000**, *19*, 672-683.
14. L. Cronin, A. R. Mount, S. Parsons, N. Robertson, 'A new class of macrocycle capable of binding exogenous metals: synthesis, structure, magnetic and electrochemical properties of a Cu(II) trinuclear complex based upon 1,4,8,11-tetraazacyclotetradecane-2,3-dione [exoO₂]cyclam', *Dalton Trans.*, **1999**, 1925-1927.
13. D. J. White, L. Cronin, S. Parsons, N. Robertson, P. A. Tasker, A. P. Bisson, 'Control of copper(II) coordination geometry via supramolecular assembly of ligands in the solid state', *Chem. Commun.*, **1999**, 1107-1108.
12. L. Cronin, M. Harper, P. Walton, C. Lindsay, 'catena-poly[diamminecopper(II)- μ -acetato-O : O '] tetrafluoroborate', *Acta Crystallogr. C*, **1998**, *54*, 1255-1257.
11. C. J. Boxwell, R. Bhalla, L. Cronin, S. S. Turner, P. H. Walton, 'Self-assembly preparation, structure and magnetic studies of a novel dinuclear copper(II) complex: [Cu₂(μ -OH)(μ -OAc)(μ -L)][BF₄]₂ [L = bis-1,3-(*cis,cis*-1,3,5-triaminocyclohexane)xylylidene]', *Dalton Trans.*, **1998**, 2449-2450.
10. D. Chan, L. Cronin, S. B. Duckett, P. Hupfield, R. N. Perutz, 'Synthesis, structure and reactivity of N,O-metallacyclic (dicarbonyldiazene) platinum complexes', *New J. Chem.*, **1998**, *22*, 511-516.
9. L. Cronin, P. H. Walton, 'Synthesis and single crystal X-ray structure of a novel trinuclear copper(II) methoxide complex', *Inorg. Chim. Acta*, **1998**, *269*, 241-245.
8. L. Cronin, C. L. Higgitt, R. Karch, R. N. Perutz, 'Rapid intermolecular carbon-fluorine bond activation of pentafluoropyridine at nickel(0): Comparative reactivity of fluorinated arene and fluorinated pyridine derivatives', *Organometallics*, **1997**, *16*, 4920-4928.
7. L. Cronin, P. H. Walton, 'Functional and structural model complexes of zinc metalloenzymes using ligands based on *cis,cis*-1,3,5-triaminocyclohexane', *J. Inorg. Biochem.*, **1997**, *67*, 221.
6. L. Cronin, M. H. Moore, J. A. Semlyen, B. R. Wood, 'A cyclic monomer of tetraethyleneglycol succinate', *Acta Crystallogr. C*, **1997**, *53*, 940-942.
5. D. J. Nightingale, L. Cronin, J. H. Clark, 'Methylhexamethylenetetramine fluoride tetrahydrate, MeHMTAF.4H₂O', *Acta Crystallogr. C*, **1997**, *53*, 789-791.
4. L. Cronin, B. Greener, S. P. Foxon, S. L. Heath, P. H. Walton, 'Syntheses and single-crystal X-ray structures of a series of monosubstituted *cis,cis*-1,3,5-triaminocyclohexane-based complexes', *Inorg. Chem.*, **1997**, *36*, 2594-2600.
3. L. Cronin, B. Greener, M. H. Moore, P. H. Walton, 'Preparations and structures of two *cis,cis*-1,3,5-triaminocyclohexane-based complexes containing hydrogen-bonded solvent molecules', *Dalton Trans.*, **1996**, 3337-3339.

2. B. Greener, L. Cronin, G. D. Wilson, P. H. Walton, 'Preparations and structures of a series of novel, mono-substituted *cis,cis*-1,3,5-triaminocyclohexane-based complexes', *Dalton Trans.*, **1996**, 401-403.

1. L. Cronin, M. C. Nicasio, R. N. Perutz, R. G. Peters, D. M. Roddick, M. K. Whittlesey, 'Laser Flash-Photolysis and Matrix-Isolation Studies of Ru[R₂PCH₂CH₂PR₂]₂H₂ (R=C₂H₅, C₆H₅, C₂F₅) - Control of Oxidative Addition Rates by Phosphine Substituents', *J. Am. Chem. Soc.*, **1995**, *117*, 10047-10054.

Grants and contracts (listed as 100% FEC):

Current Grants: Selected from a list of grants worth more than ca. £ 13.0 M with Cronin as PI (only the Funding in the Cronin Lab is Shown)

Project Title	Start Date	End Date	Funder Code	Amount
SMART-POM	31/10/2015	30/10/2020	670467	€2,464,532
Programmable 'Digital' Synthesis for Discovery and Scale-up of Molecules, Clusters and Nanomaterials	31/10/2014	30/10/2019	EP/L023652/1	£3,666,598
Synthetic Biology applications to Water Supply and Remediation	01/10/2013	30/09/2018	EP/K038885/1	£5,191,661
EVOBLISS	01/02/2014	31/01/2018	611640	€609,000
Programmable Molecular Metal Oxides (PMMOs) - From Fundamentals to Application	31/12/2012	30/12/2017	EP/J015156/1	£1,732,456
Plug'n Play Photosynthetic for Rubisco Independent Fuels	30/11/2014	29/11/2017	BB/M011267/1	£444,430
The Multi-Corder: Poly-Sensor Technology	13/05/2013	31/10/2017	EP/K021966/1	£3,009,066
Cronin 3D Spin-out	01/10/2012	31/03/2017	EPSRC (Cronin, Prof Leroy) IAA	£676,000
EVOPROG	01/10/2013	30/09/2016	610730	€815,000
Energy and the Physical Sciences: Hydrogen Production using a Proton Electron Buffer	30/09/2013	29/09/2016	EP/K023004/1	£475,175
PROMISE: Programmable RedOx Materials for Inorganic Sustainable Energy	07/10/2013	06/10/2015	SC-ENTER (Cronin, Prof Leroy)	£751,959
Innovative Manufacturing Research Centre for Continuous Manufacturing and Crystallisation (CMAC)	01/10/2011	30/09/2015	EP/I033459/	£425,255
Microscale Chemically Reactive Electronic Agents	01/09/2012	31/08/2015	318671	£535,369
A Digital DNA Nano Writer (DNA NanoFab)	28/02/2014	27/08/2015	EP/L015668/1	£242,576

International Collaboration in Chemistry - Modular microtubular architectures for photo-driven water splitting	01/05/2012	30/04/2015	EP/J00135X/1	£399,025
RSE BP Hutton Prize	01/03/2014	28/02/2015	ROY_SOC_ED (Cronin, Prof Leroy)	£10,000

Total current grant funding in PI-lab (not all listed):

£13,240,596.00

Selected Previous Grants with Cronin as PI (only the Funding in the Cronin Lab is Shown):

IAA-EPSC: Low Power FLASH Memory, 2014	£42,002
Evolutionary / optimisation of formulation processes using flow systems, 2013-2014	£100,000
Bio-inspired Oxygen Evolving Light Driven Catalysts, EUROCORE, EuroSolarFuels, 2011-2014	£287,421
Plug'n Play Photosynthesis for RuBisCO independent fuels. BBSRC-NSF, 2011-2014	£391,790
Molecular-Metal-Oxide-Nanoelectronics – Achieving the Molecular Limit, L. Cronin (PI) EPSRC, (EP/H024107), 2010-2014	£4,458,843
Crystallization under flow. Spirit Horizon, 4 other partners, 2009-2014	£458,021
"The CHELL": Approach to Minimal Life, 4 partners, EPSRC, (EP/G026130) 2009-2013	£466,562
Artificial Photosynthesis: Solar Fuels, EPSRC, EP/F047851, 3 partners, 2009-2013	£563,068
Inorganic Energy, Royal Society-Wolfson Laboratory Refurbishment, 2011-2013	£200,000
POMHydcat Hydrogenase Catalysts; EU-MC IOF, 2011-2013	£186,264
NewQDS - New Frontiers in Quantum Dots; EU-MC, 2010-2013	£195,558
Bridging the Gap in Self Assembly of POMs, EPSRC, EP/F030509, 2008-2011	£369,648
Nanoscale Metal Oxides for Responsive Systems, EPSRC, EP/F022921, 3 partners 2008-2011	£357,663
Unilever Research PLC, 2008-2011	£30,000
Directed Reconfigurable Nanomachines, EPSRC, EP/F009410, 2008-2011	£205,294
Spirit Studentship with FujiFilm, 2009-2011	£45,000
Self-Assembly of Nanoscale Polyoxometalates, EPSRC Fellowship, EP/C542819, 2006-2011	£261,614
Understanding acidic polyoxometalate solids, BP, 2006-2009	£65,000
Philip Leverhulme Prize, 2007-2011	£70,000
SMT Therapeutics towards a pre-clinical package, Scottish Enterprise POC, 2005-2007	£200,000
Breaking the Mould: Fundamental new in-situ Switchable Polyoxometalate Cluster-based Acylation Catalysts, GR/S87072/01, 2005-2008	£268,880
Molecular Metal Oxides for Process Intensification, EPSRC, EP/D000513/1, 2005-2007	£62,489
Consortium of Excellence in Advanced Sensors and Their Applications, EPSRC, EP/F012519/1, 2007-2009	£22,832
Chemical Craftwork: Realising the Concept of the Artificial chemical cell with Vesicles EP/D021847/1, 2005-2009	£93,403
Evolvable CHELLware, EPSRC, EP/D023327/1, 2005-2009	£77,658
Molecular Hostages as Novel Switching Systems, Leverhulme Trust, 2002-2005	£98,000
Trapping Fundamentally New Types of Polyoxometalate Cluster Using A Shrink-Wrapping Approach, EPSRC, GR/T17205/01, 2005-2008	£196,567
Understanding and Controlling the Self Assembly of Nanoscale Polyoxometalate Clusters EPSRC, EP/C542827/1, 2006-2009	£231,768
Systematic Design of Complexes For Recognition & Binding To Dna as Probes & Therapeutic Agents, EPSRC, GR/R14323/01, 2001-2004	£62,549