

Leigh Aldous (歐德理)

Associate Professor

- B.S. in Colour and Polymer Chemistry, University of Leeds, England, 2001-2004
- Ph.D. in Chemistry and Chemical Engineering, Queen's University Belfast, Northern Ireland, 2004-2007
- Postdoc in Chemistry and Chemical Engineering, Queen's University Belfast, Northern Ireland, 2007-2009
- Postdoc in Physical and Theoretical Chemistry, University of Oxford, England, 2009-2011
- Lecturer, School of Chemistry, UNSW Sydney, Australia, 2011-2016
- Senior Lecturer, Department of Chemistry, King's College London, 2017-2023
- Visiting Senior Lecturer, Department of Chemistry, King's College London, 2023-2024
- Associate Professor, Department of Chemical Engineering, National Taiwan University, Taiwan, 2024-onwards.

Journal Papers

- 1 D.A. Koomson, J.H. Nicholson, A.P.S. Brogan(*), **L. Aldous(*)**, "Re-assessing viologens for modern bio-electrocatalysis" Chemical Science **2024**, 15, 9325-9332.
- 2 K. Laws, M.A. Buckingham, **L. Aldous(*)**, "Self-Assembled Monolayers for Electrostatic Electrocatalysis and Enhanced Electrode Stability in Thermogalvanic Cells" Chemical Science **2024**, 15, 6958-6964.
- 3 K. Laws, M.A. Buckingham, M. Farleigh, M. Ma, **L. Aldous(*)**, "High Seebeck coefficient thermogalvanic cells via the solvent-sensitive charge additivity of cobalt 1,8-diaminosarcophagine" Chemical Communications **2023**, 59, 2323-2326.
- 4 Y. Zhou, S. Zhang, M.A. Buckingham, **L. Aldous**, *et al.* "Novel porous thermosensitive gel electrolytes for wearable thermo-electrochemical cells" Chemical Engineering Journal **2022**, 449, 137775.
- 5 M.A. Trosheva, M.A. Buckingham, **L. Aldous(*)**, "Direct measurement of the genuine efficiency of thermogalvanic heat-to-electricity conversion in thermocells" Chemical Science **2022**, 13 (17), 4984-4998 ("Most popular 2022 Materials and Energy Articles").
- 6 M.A. Buckingham, F. Stoffel, S. Zhang, Y. Liu, F. Marken, J. Chen, **L. Aldous(*)**, "Nanostructuring Electrode Surfaces and Hydrogels for Enhanced Thermocapacitance" ACS Applied Nano Materials **2022**, 5 (1), 438-445.
- 7 M.A. Buckingham, K. Laws, E. Cross, A.J. Surman, **L. Aldous(*)**, "Developing iron-based anionic redox couples for thermogalvanic cells: Towards the replacement of the ferricyanide/ferrocyanide redox couple" Green Chemistry, **2021**, 23, 8901-8915 ("2021 Green Chemistry Hot Article").
- 8 M.A. Buckingham, S. Zhang, Y.Q. Liu, J. Chen, F. Marken, **L. Aldous(*)**,

- “Thermogalvanic and Thermocapacitive Behavior of Superabsorbent Hydrogels for Combined Low-Temperature Thermal Energy Conversion and Harvesting” ACS Applied Energy Materials, **2021**, 4, 11204-11214.
- 9 M.A. Buckingham, K. Laws, H.X. Li, Y.F. Kuang, **L. Aldous**(*), “Thermogalvanic cells demonstrate inherent physiochemical limitations in redox-active electrolytes at water-in-salt concentrations” Cell Reports Physical Science, **2021**, 2, 100510.
 - 10 R.A. Grothe, A. Lobato, B. Mounsef, N. Tasi, A.A.C. Braga, M.O. Maldaner, **L. Aldous**, T.R.L.C. Paixao, L.M. Goncalves, “Electroanalytical profiling of cocaine samples by means of an electropolymerized molecularly imprinted polymer using benzocaine as the template molecule” Analyst, **2021**, 146, 1747-1759.
 - 11 Y.T. Zhou, Y.Q. Liu, M.A. Buckingham, S. Zhang, **L. Aldous**, S. Beirne, G. Wallace, J. Chen, “The significance of supporting electrolyte on poly (vinyl alcohol) - iron(II)/iron(III) solid -state electrolytes for wearable thermo-electrochemical cells” Electrochemistry Communications, **2021**, 124, 106938.
 - 12 Y.Q. Liu, S. Zhang, Y.T. Zhou, M.A. Buckingham, **L. Aldous**, P.C. Sherrell, G.G. Wallace, G. Ryder, S. Faisal, D.L. Officer, S. Beirne, J. Chen, “Advanced Wearable Thermocells for Body Heat Harvesting” Advanced Energy Materials, **2020**, 10, 2002539.
 - 13 M.A. Buckingham, K. Laws, J.T. Sengel, **L. Aldous**(*), “Using iron sulphate to form both n-type and p-type pseudo-thermoelectrics: non-hazardous and 'second life' thermogalvanic cells” Green Chemistry, **2020**, 22, 6062-6074 (“2020 *Green Chemistry Hot Article*”).
 - 14 M.A. Buckingham, **L. Aldous**(*), “Thermogalvanic cells: A side-by-side comparison of measurement methods” Journal of Electroanalytical Chemistry, **2020**, 872, 114280.
 - 15 R.A.S. Couto, B. Mounsef, F. Carvalho, C.M.P. Rodrigues, A.A.C. Braga, **L. Aldous**, L.M. Goncalves, M.B. Quinaz, “Methylone screening with electropolymerized molecularly imprinted polymer on screen-printed electrodes”, Sensors and Actuators B – Chemical, **2020**, 316, 128133.
 - 16 M.A. Buckingham, S. Hammoud, H.X. Li, C.J. Beale, J.T. Sengel, **L. Aldous**(*), “A fundamental study of the thermoelectrochemistry of ferricyanide/ferrocyanide: cation, concentration, ratio, and heterogeneous and homogeneous electrocatalysis effects in thermogalvanic cells” Sustainable Energy & Fuels, **2020**, 4, 3388-3399.
 - 17 H.A.H. Alzahrani, M.A. Buckingham, W.P. Wardley, R.D. Tilley, N. Ariotti, **L. Aldous**(*), “Gold nanoparticles immobilised in a superabsorbent hydrogel matrix: facile synthesis and application for the catalytic reduction of toxic compounds”,

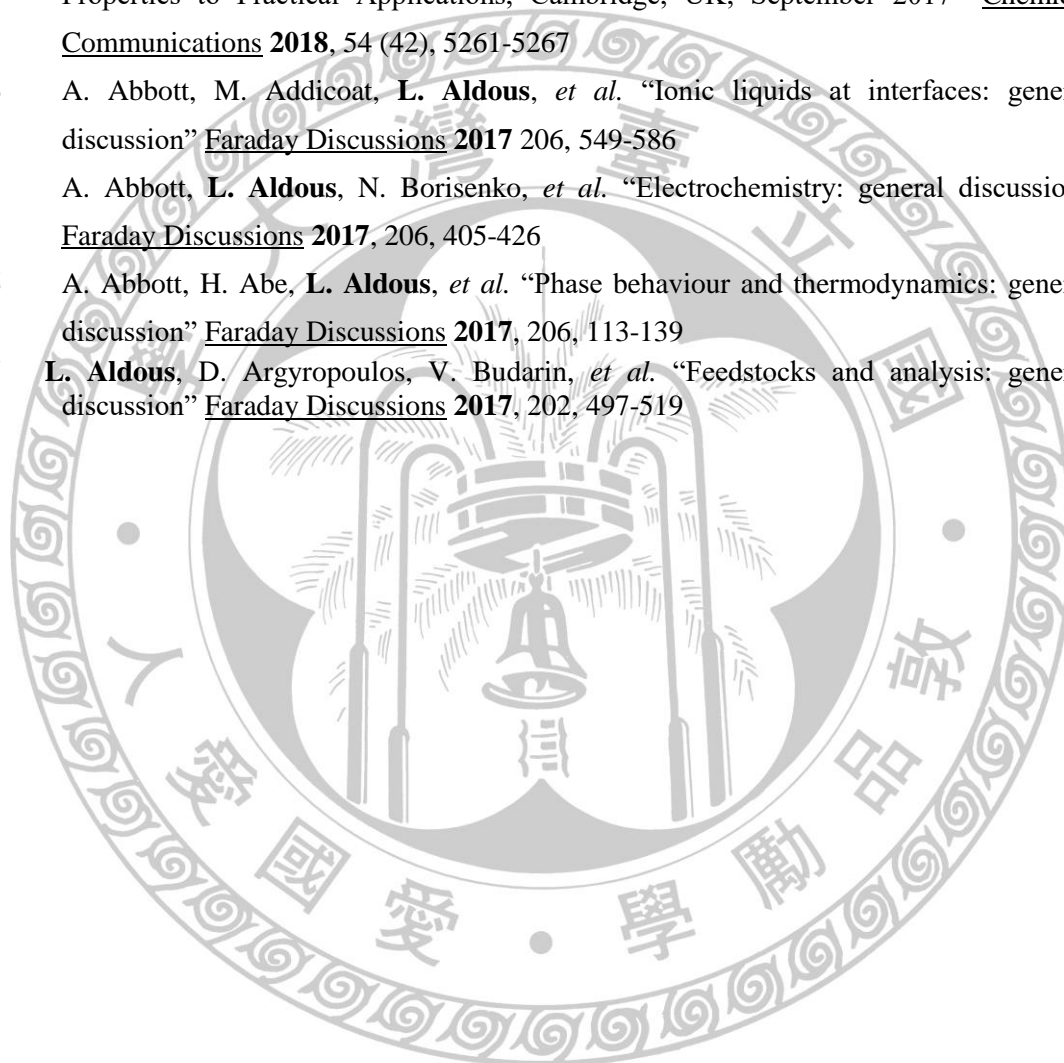
Chemical Communications, **2020**, 56, 1263-1266.

- 18** M.M. Hossain, A. Rawal, **L. Aldous**(*), “Aprotic vs Protic Ionic Liquids for Lignocellulosic Biomass Pretreatment: Anion Effects, Enzymatic Hydrolysis, Solid-State NMR, Distillation, and Recycle”, ACS Sustainable Chemistry & Engineering, **2019**, 7, 11928-11936.
- 19** P. Zheng, A. Eskandari, C. Lu, K. Laws, **L. Aldous**(*), K. Suntharalingam(*), “Biophysical analysis of cancer stem cell-potent copper (II) coordination complexes” Dalton Transactions, **2019**, 48, 5892-5896.
- 20** H.A.H. Alzahrani, M.A. Buckingham, F. Marken, **L. Aldous**(*), “Success and failure in the incorporation of gold nanoparticles inside ferri/ferrocyanide thermogalvanic cells” Electrochemistry Communications, **2019**, 102, 41-45.
- 21** M.A. Buckingham, F. Marken, **L. Aldous**(*), “The thermoelectrochemistry of the aqueous iron (II)/iron (III) redox couple: significance of the anion and pH in thermogalvanic thermal-to-electrical energy conversion” Sustainable Energy & Fuels, **2018**, 2 (12), 2717-2726 (“2018 Sustainable Energy and Fuels Hot Article”).
- 22** J.J. Black, A. Dolan, J.B. Harper(*), **L. Aldous**(*), “Kamlet-Taft solvent parameters, NMR spectroscopic analysis and thermoelectrochemistry of lithium-glyme solvate ionic liquids and their dilute solutions” Physical Chemistry Chemical Physics, **2018**, 20, 16558-16567.
- 23** W.E.S. Hart, **L. Aldous**, J.B. Harper “Nucleophilic Cleavage of Lignin Model Compounds under Acidic Conditions in an Ionic Liquid: A Mechanistic Study” ChemPlusChem, **2018**, 83 (5), 348-353.
- 24** J.J. Black, J.B. Harper, **L. Aldous**(*), “Temperature effect upon the thermoelectrochemical potential generated between lithium metal and lithium ion intercalation electrodes in symmetric and asymmetric battery arrangements” Electrochemistry Communications, **2018**, 86, 153-156.
- 25** **L. Aldous**(*), J.J. Black, M.C. Elias, B. Gélinas, D. Rochefort, “Enhancing thermoelectrochemical properties by tethering ferrocene to the anion or cation of ionic liquids: altered thermodynamics and solubility” Physical Chemistry Chemical Physics, **2017**, 19 (35), 24255-24263.
- 26** W.E.S. Hart, **L. Aldous**, J.B. Harper “Cleavage of ethers in an ionic liquid. Enhancement, selectivity and potential application” Organic & Biomolecular Chemistry, **2017**, 15 (26), 5556-5563.
- 27** S. Xu, M.M. Hossain, B.B.Y. Lau, T.Q. To, A. Rawal, **L. Aldous**(*), “Total quantification and extraction of shikimic acid from star anise (*Ilicium verum*) using

- solid-state NMR and cellulose-dissolving aqueous hydroxide solutions” Sustainable Chemistry and Pharmacy, **2017**, 5, 115-121.
- 28** B.B.Y. Lau, T. Yeung, R.J. Patterson, **L. Aldous(*)**, “A Cation Study on Rice Husk Biomass Pretreatment with Aqueous Hydroxides: Cellulose Solubility Does Not Correlate with Improved Enzymatic Hydrolysis” ACS Sustainable Chemistry & Engineering, **2017**, 5 (6), 5320-5329.
- 29** T.Q. To, C. Kenny, S. Cheong, **L. Aldous(*)**, “Carbon dioxide as a pH-switch anti-solvent for biomass fractionation and pre-treatment with aqueous hydroxide solutions” Green Chemistry, **2017**, 19 (9), 2129-2134.
- 30** J. Wu, J.J. Black, **L. Aldous(*)**, “Thermoelectrochemistry using conventional and novel gelled electrolytes in heat-to-current thermocells” Electrochimica Acta, **2017**, 225, 482-492.
- 31** M. Al Maimani, J. J. Black, **L. Aldous(*)**, “Achieving pseudo-‘n-type p-type’ in-series and parallel liquid thermoelectrics using all-iron thermoelectrochemical cells with opposite Seebeck coefficients” Electrochemistry Communications, **2016**, 72, 32-35.
- 32** J. J. Black, T. Murphy, R. Atkin, A. Dolan, **L. Aldous(*)**, “The Thermoelectrochemistry of Lithium-Glyme Solvate Ionic Liquids: Towards Waste Heat Harvesting”, Physical Chemistry Chemical Physics, **2016**, 18, 20768-20777.
- 33** M. M. Hossain, **L. Aldous(*)**, “Polyoxometalates as solution-phase electrocatalytic mediators for reduced electrode fouling and the improved oxidative response of phenols”, Electrochemistry Communications, **2016**, 69, 32-35.
- 34** Y. V. Kaneti, X. Zhang, M. Liu, D. Yu, Y. Yuan, **L. Aldous**, X. Jiang, "Experimental and Theoretical Studies of Gold Nanoparticle Decorated Zinc Oxide Nanoflakes with Exposed {1010} Facets for Butylamine Sensing", Sensors & Actuators: B. Chemical, **2016**, 230, 581-591.
- 35** E. E. L. Tanner, K. Y. Foong, M. M. Hossain, C. Batchelor-McAuley, **L. Aldous(*)**, R. G. Compton(*), "The Corannulene Reduction Mechanism in Ionic Liquids is Controlled by Ion Pairing", Journal of Physical Chemistry C **2016**, 120, 8405-8410.
- 36** E.H.B. Anari, M. Romano, W.X. Teh, J.J. Black, E. Jiang, J. Chen, T.Q. To, J. Panchompoo, **L. Aldous(*)**, "Substituted ferrocenes and iodine as synergistic thermoelectrochemical heat harvesting couples in ionic liquids", Chemical Communications, **2016**, 52, 745-748.
- 37** R. R. Hawker, J. Panchompoo, **L. Aldous**, J. B. Harper, "Novel chloroimidazolium-based ionic liquids: synthesis, characterisation and behaviour as solvents to control reaction outcome", ChemPlusChem **2016**, 81, 574-583.

Conference papers/proceedings/editorials

- 1 **L. Aldous**, P. Comba, S. DeBeer, *et al* “Small molecule activation and synthetic analogues: general discussion” Faraday Discussions **2022**, 234, 129-142
- 2 **L. Aldous**(*), “Innovative methods in electrochemistry The challenge, the energy and the need” Current Opinion in Electrochemistry **2019**, 15, A1-A6
- 3 **L. Aldous**(*), M. Bendova(*), M. Gonzalez-Miquel(*), M. Swadźba-Kwaśny(*) “Highlights from the Faraday Discussion on Ionic Liquids: From Fundamental Properties to Practical Applications, Cambridge, UK, September 2017” Chemical Communications **2018**, 54 (42), 5261-5267
- 4 A. Abbott, M. Addicoat, **L. Aldous**, *et al.* “Ionic liquids at interfaces: general discussion” Faraday Discussions **2017** 206, 549-586
- 5 A. Abbott, **L. Aldous**, N. Borisenko, *et al.* “Electrochemistry: general discussion” Faraday Discussions **2017**, 206, 405-426
- 6 A. Abbott, H. Abe, **L. Aldous**, *et al.* “Phase behaviour and thermodynamics: general discussion” Faraday Discussions **2017**, 206, 113-139
- 7 **L. Aldous**, D. Argyropoulos, V. Budarin, *et al.* “Feedstocks and analysis: general discussion” Faraday Discussions **2017**, 202, 497-519



b)

b9

L. Aldous, P. Comba, S. DeBeer, *et al.* "Small molecule activation and synthetic analogues: general discussion" Faraday Discussions **2022**, 234, 129-142

b8

L. Aldous(+), "Innovative methods in electrochemistry The challenge, the energy and the need" Current Opinion in Electrochemistry **2019**, 15, A1-A6

b7

L. Aldous(+), M. Bendova(+), M. Gonzalez-Miquel(+), M. Swadźba-Kwaśny(+). "Highlights from the Faraday Discussion on Ionic Liquids: From Fundamental Properties to Practical Applications, Cambridge, UK, September 2017" Chemical Communications **2018**, 54 (42), 5261-5267

b6

A. Abbott, M. Addicoat, **L. Aldous**, *et al.* "Ionic liquids at interfaces: general discussion" Faraday Discussions **2017**, 206, 549-586

b5

A. Abbott, **L. Aldous**, N. Borisenko, *et al.* "Electrochemistry: general discussion" Faraday Discussions **2017**, 206, 405-426

b4

A. Abbott, H. Abe, **L. Aldous**, *et al.* "Phase behaviour and thermodynamics: general discussion" Faraday Discussions **2017**, 206, 113-139

b3

L. Aldous, D. Argyropoulos, V. Budarin, *et al.* "Feedstocks and analysis: general discussion" Faraday Discussions **2017**, 202, 497-519

Patents

1. P. Phelan, **L. Aldous**, R. Taylor, B. Obeng, "Systems and methods for a power-generating thermogalvanic brick" WO/2020/082028 (PCT/US2019/057071)