Louis C. Morrill: CV & Publications List (Updated October 2018)

Group Webpages: https://blogs.cardiff.ac.uk/themorrillgroup/
Mailing Address: School of Chemistry, Cardiff University, Main Building, Park Place, Cardiff, CF10 3AT, UK.
Contact Details: MorrillLC@cardiff.ac.uk, 029208 75840
Date of Birth: 22nd May 1987, Wick, UK

Summary of Education & Career:

08/2018 – Present	Senior Lecturer in Synthetic Organic Chemistry, Cardiff University, UK
06/2015 – 07/2018	University Research Fellow in Synthetic Organic Chemistry, Cardiff University, UK
06/2014 – 06/2015	Postdoctoral Research Associate in Synthetic Organic Chemistry, UC Berkeley, USA
10/2010 – 06/2014	PhD in Organic Chemistry and Catalysis, University of St Andrews, UK
10/2005 – 06/2010	MChem (Hons) 1st Class, Chemistry with Industrial Experience, University of St Andrews, UK

Research Area Summary:
Research in the Morrill group is focused on inventing new reactions in organic chemistry and developing sustainable catalytic methodologies for synthesis. The utility and impact of our research will ultimately be exemplified through its application in the total synthesis of natural products and molecules of biological significance.

Core Research Areas:
- Borrowing hydrogen catalysis
- Synthetic organic electrochemistry
- Frustrated Lewis Pair (FLP) catalysis (in collaboration with Dr Rebecca Melen)
- Exploring new synthetic routes towards cyanamides (in collaboration with Syngenta)

Collaborations:
- Enabling tools (flow and mechanochemistry) for organocatalysis (collaboration led by Dr Duncan Browne)
- Organocatalytic artificial enzymes (collaboration led by Dr Louis Luk)

Current Research Group Members:
- 3 x Postdoctoral research associates
- 8 x PhD students
- 3 x Undergraduate project students

Former Group Members:
- 1 x Postdoctoral research associate
- 3 x Catalysis CDT research sabbatical students
- 14 x Final-year BSc/MSc/MChem project students
- 6 x International visiting students

Research Grant Income:
Attracted ~£938k of funding (~£700k as PI/Host) to support 4 postdoctoral research associates (EPSRC, Leverhulme Trust, Royal Society), 1 PhD studentship (KESS 2) and multiple undergraduate research students (CUROP, RSC, IBCarb, RISE) since becoming PI at Cardiff University (06/2015). Selected funding includes:

- 2018-2021, KESS 2 Knowledge Economy Skills Scholarships – *The use of Enabling Technologies for Sustainable Chemical Synthesis and Manufacture*
  £49,873 (Browne as PI, Morrill as CoI, 1 x 3-year PhD studentship and consumables)

- 2018-2020, Newton International Fellowship (NIF\R1\180099) – *Metallo-Carbenoids and Organocatalysis in Synergy*
  £100,500 (Verma as Fellow, Morrill as Host, 1 x 2-year postdoctoral research associate, equipment and consumables)

- 2017-2020, EPSRC Standard Research Grant (EP/R006504/1) – *Developing Continuous Electroorganic Catalysis – It's Got Potential*
  £395,968 (Morrill as PI, Browne and Wirth as CoI, 1 x 3-year postdoctoral research associate, equipment, consumables and funds for conference organisation on enabling technologies)

- 2017-2020, The Leverhulme Trust Research Project Grant (RPG-2017-195) – *Designing Multifunctional Organocatalytic Artificial Enzymes*
  £179,600 (Luk as PI, Morrill as CoI, 1 x 3-year postdoctoral research associate and consumables)

- 2016-2019, The Leverhulme Trust Research Project Grant (RPG-2015-361) – *The Productive Merger of Organocatalysis and Frustrated Lewis Pairs*
  £175,992 (Morrill as PI, Melen as CoI, 1 x 3-year postdoctoral research associate and consumables)

- 2016-2018, Various undergraduate studentships (CUROP, RSC, IBCarb, RISE)
  £24,100 (Morrill as PI or CoI, stipends for 2-3 month undergraduate student placements)

- 2016-2017, The Royal Society Research Grant (RG150466) – *A New Frontier in Dual Catalysis*
  £11,665 (Morrill as PI, Chiral HPLC columns for analysis of scalemic mixtures)

Recognition:

- 2017-2018, Nominated for Enriching Student Life Awards – Most Effective Teacher (2017), Most Uplifting Member of Staff (2018) and Personal Tutor of the Year (2018)
- 2010-2014, Carnegie Trust PhD Studentship
- 2012, Syngenta Postgraduate Scholarship
- 2010, Miller Prize for "Highest Achieving Student in the Faculty of Science", University of St Andrews
- 2010, Irvine Jubilee Prize for "Highest Achieving Student in Honours Chemistry", University of St Andrews
- 2010, F. D. Gunstone Prize for "Best MChem Organic Chemistry Project", University of St Andrews

Teaching:

- Module coordinator of 1st year organic chemistry
- 1st year organic chemistry: *Substitution and Elimination Reactions* (*New Course*, 8 lectures)
- Final-year/taught postgraduate organic chemistry: *Organocatalysis* (*New Course*, 6 lectures)
- MRes Catalysis CDT: *Organocatalysis* (*New Course*, 3-hour workshop)
- MChem and BSc final-year undergraduate research project supervisor
- Tutorial support for 1st, 2nd and 3rd year organic chemistry courses
- Industrial placement/year abroad supervisor for undergraduate students

Administration and other positions of responsibility:

- Member of working panel to restructure the undergraduate organic chemistry course at Cardiff University (years 1-4)
- Personal tutor for undergraduate and postgraduate students
- Molecular Synthesis section representative on the Safety Committee, School Seminar Programme Committee, Learning & Teaching Committee and the Cardiff Chemistry Conference Committee
- Organiser of the Molecular Synthesis Seminar Series
- Grant peer reviewer for EPSRC, MRC and ANR
- Publication peer reviewer for various journals including Nat. Catal., ChemSusChem., Org. Lett., Chem. Commun., and Org. Biomol. Chem.
- Member of the organisational team for the annual Cardiff International Summer School
- Regular participation in school open days and UCAS days
- Served as external examiner (PhD = 1) and internal examiner (PhD = 3, MPhil = 2)

Invited Lectures

29. Departmental Seminar, 14th November 2018, Nottingham University, UK.
28. Departmental Seminar, 7th November 2018, Nottingham Trent University, UK.
27. Gregynog Synthesis Workshop, 12-14th September 2018, Newtown, UK
26. UNICAMP International Research Workshop, 5-9th March 2018, Campinas, Brazil
25. Departmental Seminar, 16th February 2018, Technische Universität Berlin, Germany
24. RSC Organic Division South West Regional Meeting, 17th January 2018, University of Bristol, UK
23. Departmental Seminar, 3rd November 2017, Queen Mary University of London, UK
22. Xiamen International Workshop, 18-22nd September 2017, Xiamen, China
21. Gregynog Synthesis Workshop, 13-15th September 2017, Newtown, UK
20. Enabling Technologies for Synthesis DaM Event, 4-5th September 2017, Loughborough University, UK
19. Departmental Seminar, 23rd June 2017, University of Manchester, UK
18. Supporting Synthesis & Self-Assembly DaM ECR Event, 19-20th June 2017, Liverpool, UK
17. 253rd ACS National Meeting & Exposition, 4th April 2017, San Francisco, USA
16. 253rd ACS National Meeting & Exposition, 3rd April 2017, San Francisco, USA
15. Departmental Seminar, 31st March 2017, Theravance Biopharma, San Francisco, USA
14. Departmental Seminar, 23rd February 2017, Aarhus University, Denmark
13. 15th Cardiff Chemistry Conference, 10th May 2016, Cardiff University, UK
12. 3rd Molecular Synthesis Section Meeting, 14th April 2016, Cardiff University, UK
11. Gregynog Synthesis Workshop, 9-11th September 2015, Newtown, UK
10. IX J-NOST Conference, 4-6th December 2013, IISER Bhopal, India
9. Final Year PhD Symposium, 5th September 2013, University of St Andrews, UK

8. 23rd International Symposium: Synthesis in Organic Chemistry, 22-25th July 2013, Oxford University, UK
7. 14th Tetrahedron Conference, 25-28th June 2013, Vienna, Austria
6. 24th Regional Postgraduate Symposia on Organic Chemistry, 16th April 2013, Dundee University, UK
5. 41st RSC Scottish Regional Organic Division Meeting, 12th December 2012, St Andrews University, UK
4. Syngenta Postgraduate Scholarship Awards Meeting, 11th December 2012, Bracknell, UK
3. RSC Organic Division Poster Symposium, 3rd December 2012, Burlington House, London, UK
2. ISACS7: Challenges in Organic Chemistry, 12-15th June 2012, Edinburgh University, UK
1. Lilly Organic Chemistry Postgraduate Prize Day, 3rd October 2011, Erl Wood Manor, Windlesham, UK

Published Work:
Total citations ~790; average citations per paper = 24; papers cited >50 times = 5; H-index = 16.

Independent and Collaborative Publications (Cardiff University):

33. *"Recent Advances in Homogeneous Borrowing Hydrogen Catalysis Using Earth-Abundant First Row Transition Metals*", B. G. Reed-Berendt, K. Polidano and L. C. Morrill*, *Org. Biomol. Chem.*, 2018, DOI: 10.1039/c8ob01895b. [Invited contribution to the 2018 New Talent special issue]. (Citations = 0)

32. *"FLP-Catalyzed Transfer Hydrogenation of Silyl Enol"*, I. Khan, B. G. Reed-Berendt, R. L. Melen* and L. C. Morrill*, *Angew. Chem. Int. Ed.*, 2018, DOI: 10.1002/anie.201808800. (Citations = 0)

31. *"Synthesis and Reactivity of N-Allenyl Cyanamides"*, J. N. Ayres, M. T. J. Williams, G. J. Tizzard, S. J. Coles, K. B. Ling and L. C. Morrill*, *Org. Lett.*, 2018, **20**, 5282-5285. (Citations = 0)

30. *"Reactivity and Selectivity of Iminium Organocatalysis Improved by a Protein Host"*, A. R. Nödling, K. Świderek, R. Castillo, J. W. Hall, A. Angelastro, L. C. Morrill, Y. Jin, Y-H. Tsai, V. Moliner* and L. Y. P. Luk*, *Angew. Chem. Int. Ed.*, 2018, DOI: 10.1002/anie.201806850. (Citations = 0)

29. *"Iron-Catalyzed Methylation using the Borrowing Hydrogen Approach",* K. Polidano, B. D. W. Allen, J. M. J. Williams and L. C. Morrill*, *ACS Catal.*, 2018, **8**, 6440-6445. (Citations = 3)

28. *"Exploring Tandem Ruthenium-Catalyzed Hydrogen Transfer and S_NAr Chemistry",* K. Polidano, B. G. Reed-Berendt, A. Basset, A. J. A. Watson, J. M. J. Williams and L. C. Morrill*, *Org. Lett.*, 2017, **19**, 6716-6719. (Citations = 1)

27. *"Frustrated Lewis Pair (FLP)-Catalyzed Hydrogenation of Aza-Morita-Baylis-Hillman Adducts and Sequential Organo-FLP Catalysis",* I. Khan, M. Manzotti, G. J. Tizzard, S. J. Coles, R. L. Melen* and L. C. Morrill*, *ACS Catal.*, 2017, **7**, 7748-7752. (Citations = 3)

26. *"Deoxycyanamidation of Alcohols using N-Cyano-N-phenyl-p-methylbenzenesulfonamide (NCTS)",* J. N. Ayres, M. W. Ashford, Y. Stöckl, V. Prudhomme, K. B. Ling, J. A. Platts and L. C. Morrill*, *Org. Lett.*, 2017, **19**, 3835-3838. (Citations = 2)

25. *"N-Cyanation of Secondary Amines using Trichloroacetonitrile",* J. N. Ayres, K. B. Ling and L. C. Morrill*, *Org. Lett.*, 2016, **18**, 5528-5531. (Citations = 7)

Postdoctoral Publications (UC Berkeley with Prof. Richmond Sarpong):

24. *"A Benzyne-Insertion Approach to Hetisine-Type Diterpenoid Alkaloids: Synthesis of Cossonidine (Davisine)"*, K. G. M. Kou, J. J. Pflueger, T. Kiho, L. C. Morrill, E. L. Fisher, K. Clagg, T. P. Lebold, J. K. Kisunzu* and R. Sarpong*, *J. Am. Chem. Soc.*, 2018, **140**, 8105-8109. (Citations = 3)

23. *"A Magnesiate Addition/Ring-Expansion Strategy to Access the 6-7-6 Tricyclic Core of Hetisine-type C20-Diterpenoid Alkaloids",* J. J. Pflueger, L. C. Morrill, J. N. deGruyter, M. A. Perea and R. Sarpong*, *Org. Lett.*, 2017, **19**, 4632-4635. (Citations = 1)

22. *"Palladium-catalyzed β-Selective C(sp3)-H Arylation of N-Boc-Piperidines",* A. Miller and O. Baudoin*; Checked by L. C. Morrill and R. Sarpong, *Org. Synth.*, 2015, **92**, 76-90. (Citations = 2)

Postgraduate Publications (University of St Andrews with Prof. Andrew D. Smith):

21. *"Catalytic Generation of Ammonium Enolates and Related Tertiary Amine-Derived Intermediates, Mechanism and Stereochemical Models (n to π^*)",* K. N. Van, L. C. Morrill, A. D. Smith and D. Romo, *Booke Chapter within "Lewis Base Catalysis in Organic Synthesis",* ed. E. Vedejs and S. E. Denmark, Wiley, Weinheim, 2016. (Citations = 1)

20. *"Enantioselective Synthesis or 3,5,6-Substituted Dihydropyranones and Dihydropyridinones using Isothiourea-Mediated Catalysis",* D. G. Stark, L. C. Morrill, D. B. Cordes, A. M. Z. Slawin, T. J. C. O'Riordan and A. D. Smith*, *Chem. Asian J.*, 2016, **11**, 395-400. (Citations = 5)

19. *"Asymmetric Isothiourea-Catalysed Formal [3+2] Cyloadditions of Ammonium Enolates with Oxaziridines",* S. R. Smith, C. Fallan, J. E. Taylor, R. McLennan, D. S. B. Daniels, L. C. Morrill, A. M. Z. Slawin and A. D. Smith*, *Chem. Eur. J.*, 2015, **21**, 10530-10536. (Citations = 21)

18. *"Organocatalytic Michael Addition-Lactonisation of Carboxylic Acids using α,β-Unsaturated Trichloromethyl Ketones as α,β-Unsaturated Ester Equivalents",* L. C. Morrill, D. G. Stark, J. E. Taylor, S. R. Smith, J. A. Squires, A. C. A. D'Hollander, C. Simal, P. Shapland, T J. C. O'Riordan and A. D. Smith*, *Org. Biomol. Chem*., 2014, **12**, 9016-9027. [Highlighted in *Synfacts*, **2015**, *11*, 315]. (Citations = 19)

17. *"Organocatalytic Lewis base functionalisation of carboxylic acids and esters via ammonium/azolium enolates",* L. C. Morrill and A. D. Smith, *Chem. Soc. Rev*., 2014, **43**, 6214-6226. [One of the most accessed articles in *Chem. Soc. Rev.* during June 2014]. (Citations = 73)

16. *"Lewis Base Catalysed Asymmetric [2+2] Cycloadditions",* A. D. Smith, J. Douglas, L. C. Morrill and E. Richmond, *Book Chapter within "Methods and Applications of Cycloaddition Reactions in Organic Synthesis"*, ed. N. Nishiwaki, Wiley, New York, 2014. (Citations = 1)

15. *"Isothiourea-Mediated Asymmetric Functionalization of 3-Alkenoic Acids",* L. C. Morrill, S. M. Smith, A. M. Z. Slawin and A. D. Smith*, *J. Org. Chem.*, 2014, **79**, 1640-1655. (Citations = 43)

14. *"2-Arylacetic anhydrides as ammonium enolate precursors",* L. C. Morrill, L. A. Ledingham, J-P. Couturier, J. Bickel, A. Harper, C. Fallan and A. D. Smith*, *Org. Biomol. Chem.*, 2014, **12**, 624-636. (Citations = 28)

13. *"Isothiourea-Mediated One-Pot Synthesis of Functionalized Pyridines",* D. G. Stark, L. C. Morrill, P-P. Yeh, A. M. Z. Slawin, T. J. C. O'Riordan and A. D. Smith*, *Angew. Chem. Int. Ed.*, 2013, **52**, 11642-11646. [Selected as a Hot Paper] [Highlighted in *Synfacts*, **2013**, *9*, 1344] [Highlighted in *Org. Chem. Highlights*, **2014**, June 23]. (Citations = 77)

12. *"Isothiourea-mediated asymmetric Michael-lactonisation of trifluoromethylenones: a synthetic and mechanistic study",* L. C. Morrill, J. Douglas, T. Lebl, D. J. Fox, A. M. Z. Slawin and A. D. Smith*, *Chem. Sci.*, 2013, **4**, 4146-4155. [One of the most accessed articles in *Chem. Sci.* during August 2013]. (Citations = 70)

11. *"Stereospecific Asymmetric N-Heterocyclic Carbene (NHC)-Catalyzed Redox Synthesis of Trifluoromethyl Dihydropyranones and Mechanistic Insights",* A. T. Davies, J. E. Taylor, J. Douglas, C. J. Collett, L. C. Morrill, C. Fallan, A. M. Z. Slawin and A. D. Smith*, *J. Org. Chem.*, 2013, **78**, 9243-9257. (Citations = 47)

10. *"Catalytic asymmetric α-amination of carboxylic acids using isothioureas",* L. C. Morrill, T. Lebl, A. M. Z. Slawin and A. D. Smith*, *Chem. Sci.*, 2012, **3**, 2088-2093. (Citations = 61)

9. *"Organocatalytic Functionalisation of Carboxylic Acids: Isothiourea-Catalysed Asymmetric Intra- and Intermolecular Michael Addition-Lactonisations",* D. Belmessieri, L. C. Morrill, C. Simal, A. M. Z. Slawin and A. D. Smith*, *J. Am. Chem. Soc*., 2011, **133**, 2714-2720. [Highlighted in *Synfacts*, **2011**, *4*, 436]. (Citations = 169)

Undergraduate Publications (University of St Andrews):

8. *"Regiodivergent Lewis base-promoted O- to C-carboxyl transfer of furanyl carbonates"*, C. D. Campbell, C. Joannesse, L. C. Morrill, D. Philp and A. D. Smith*, *Org. Biomol. Chem.*, 2015, **13**, 2895-2900. (Citations = 0)

7. *"Efficacious, inhaled PDE4 inhibitors with low emetic potential and long duration of action for the treatment of COPD",* C. De Savi*, R. J. Cox*, D. Warner, A. R. Cook, M. R. Dickinson, A. McDonough, L. C. Morrill, B. Parker, G. Andrews. S. Young, P. S. Gilmour, R. Riley and M. S. Dearman, *J. Med. Chem.*, 2014, **57**, 4661-4676. (Citations = 16)

6. *"Isothiourea-Mediated Asymmetric O- to C-Carboxyl Transfer of Oxazoyl Carbonates: Structure-Selectivity Profiles and Mechanistic Studies",* C. Joannesse, C. P. Johnston, L. C. Morrill, P. A. Woods, M. Kieffer, T. A. Nigst, H. Mayr, T. Lebl, D. Philp, R. A. Bragg and A. D. Smith*, *Chem. Eur. J.*, 2012, **18**, 2398-2408. (Citations = 19)

5. *"Isothiourea-catalyzed asymmetric O- to C-carboxyl transfer of furanyl carbonates",* C. Joannesse, L. C. Morrill, C. D. Campbell, A. M. Z. Slawin and A. D. Smith*, *Synthesis*, 2011, 1865-1879. (Citations = 17)

4. *"Isothiourea-Catalyzed Asymmetric C-Acylation of Silyl Ketene Acetals",* P. A. Woods, L. C. Morrill, R. A. Bragg and A. D. Smith*, *Chem. Eur. J.*, 2011, **17**, 11060-11067. (Citations = 24)

3. *"Isothiourea-Mediated Stereoselective C-acylation of Silyl Ketene Acetals",* P. A. Woods, L. C. Morrill, T Lebl, A. M. Z. Slawin, R. A. Bragg and A. D. Smith*, *Org. Lett*., 2010, **12**, 2660-2663. (Citations = 39)

2. *"Unexpected Rearrangement Leading to Formation of a 1,3-Bis(triphenylphosponio)prop-1-en-3-idyl Carboxylate",* R. A. Aitken*, L. P. Cleghorn, R. M. Leitch, L. C. Morrill and A. M. Z. Slawin, *Eur. J. Org. Chem*., 2010, **17**, 3211-3214. (Citations = 3)

1. *"N-heterocyclic carbene catalysed O- to C-carboxyl transfer of indolyl and benzofuranyl carbonates",* J. E. Thomson, A. F. Kyle, C. Concellón, K. A. Gallagher, P. Lenden, L. C. Morrill, A. J. Miller, C. Joannesse, A. M. Z. Slawin and A. D. Smith*, *Synthesis*, 2008, 2805-2818. (Citations = 35)