

ANDREW McNALLY

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Email: Andy.McNally@colostate.edu**Nationality:** British**Date of Birth:** 18.04.1981

RESEARCH EXPERIENCE / EDUCATION

August 2014 to present **Colorado State University**
Assistant Professor, Department of Chemistry.

Research group leader in the area of organic synthesis and catalysis. Research focused towards developing new reactions to transform electron deficient aromatic heterocycles. Teaching responsibilities include graduate and undergraduate organic classes as well as mentoring students in my research laboratory.

2011 to June 2014 **University of Cambridge**
Senior Post-Doctoral Researcher
Supervisor: Dr. Matthew J. Gaunt

Management role across large (>25 scientists) research laboratory. Instigation and direct supervision of multiple research projects in the groups. Installation of state-of-the-art analytical setup and integration of new techniques into the group. Research activities: New reaction discovery, asymmetric Cu-counterion strategies in C-C bond-forming reactions.

2007 to 2011 **Princeton University**
Visiting Postdoctoral Research Associate
Marie-Curie International Outgoing Research Fellowship:
Supervisor: Professor David W. C. MacMillan

The concept of 'accelerated serendipity as a new tool for reaction discovery. Using the high-throughput facilities at the recently created Merck Centre for Catalysis at Princeton University a new blueprint for the invention of chemical reactions has been developed. A result of this new concept has witnessed the discovery and development of a new C-H functionalization reaction for the construction of benzylic amines.

2003 – 2007 **University of Cambridge**
Ph.D. Development of New Organocatalytic Reactions.
Supervisor: Dr Matthew. J. Gaunt.
Viva date – 5th April 2007.

New strategies for chemical synthesis enamines using secondary amine catalysis. An organocatalytic [2,3]-Wittig rearrangement was developed using simple secondary amines as catalysts. The concept of metallo-organocatalysis was demonstrated via the development of a direct catalytic Saegusa oxidation

1999 to 2003 **University of Cambridge**
M.A., M.Sci. Natural Sciences.
1st Class Hons.
Final year project: Investigation into aldol couplings between major subunits of the natural product Peloruside A.
Supervisor: Dr Ian Paterson.

2002 July – October **Syngenta** (Jealott's Hill Research Park, Bracknell, UK). Summer internship. Investigations into ligand-protein binding affinities using NMR spectroscopy.

PUBLICATIONS

Heterobiaryl Synthesis by Contractive C–C Coupling via P(V) Intermediates. Hilton, M. C.; Zhang, X.; Boyle, B. T.; Alegre-Requena, J. V.; Paton, R. S.;* McNally, A.* *Science*. **2018**, *362*, 799.

A Unified Approach to Couple Aromatic Heteronucleophiles to Azine and Pharmaceuticals. Anderson, R. G.; Jett, B. M.; McNally, A.* *Angew. Chem. Int. Ed.* DOI: 10.1002/anie.201807322.

Site-Selective Switching Strategies to Functionalize Polyazines. Dolewski, R. D.; Fricke, P. J.; McNally, A.* *J. Am. Chem. Soc.* **2018**, *140*, 8020.

A Strategy to Aminate Pyridines, Diazines and Pharmaceuticals via Heterocyclic Phosphonium Salts. Patel, C.; Mohnike, M.; Hilton, M. C.; McNally, A.* *Org. Lett.* **2018**, *20*, 2607.

A General Strategy for Site-Selective Incorporation of Deuterium and Tritium into Pyridines, Diazines and Pharmaceuticals. Koniarczyk, J. L.; Hesk, D.; Overgard, A.; Davies, I. W.; McNally, A.* *J. Am. Chem. Soc.* **2018**, *140*, 1990. (*Collaboration with the Merck Radiolabeling Group*).

4-Selective Pyridine Functionalization Reactions via Heterocyclic Phosphonium Salts. Dolewski, R. D.; Hilton, M. C.; McNally, A.* *Synlett* **2018**, *29*, 8-14.

Synthesis of Biotinylated Diazinon: Lessons Learned for Biotinylation of Thiphosphate Esters. Nottingham, K. G.; McNally, A.*; McNaughton, B. R.* *Tetrahedron Lett.* **2018**, *58*, 234-237.

Selective Formation of Heteroaryl Thioethers via a Phosphonium Ion Coupling Reaction. Anderson, R. G.; Jett, B. M.; McNally, A.* *Tetrahedron* **2018**, *74*, 3129. (*Invited submission for symposium-in-print issue on "Engineering Chemistry for the Future of Organic Synthesis"*).

Phosphonium Salts as Pseudohalides: Regioselective Nickel-Catalyzed Cross-Coupling of Pyridines and Diazines. Zhang, X.; McNally, A.* *Angew. Chem. Int. Ed.* **2017**, *56*, 9833-9836.

Selective Functionalization of Pyridines via Heterocyclic Phosphonium Salts. Hilton, M. C.; Dolewski, R. D.; McNally, A.* *J. Am. Chem. Soc.* **2016**, *138*, 13806-13809. (*Highlighted in Chemistry World*).

Stereoselective Synthesis: Molecular Editing of Carbohydrates. McNally, A.* *Nature Chemistry* **2015**, *7*, 539-541.

Palladium-Catalyzed C–H Activation of Aliphatic Amines to Give Strained Nitrogen Heterocycles: McNally, A.; Haffemeyer, B.; Collins, B. S. L. *Nature* **2014**, *510*, 129-133.

Organocatalytic C–H Bond Arylation of Aldehydes to Bis-Heteroaryl Ketones: Toh, Q-Y.; McNally, A.; Vera, S.; Erdmann, N.; Gaunt, M. J. *J. Am. Chem. Soc.* **2013**, *135*, 3772-3775.

Discovery of an α -Amino C–H Arylation Reaction Using the Strategy of Accelerated Serendipity: McNally, A.; Prier, C. K.; MacMillan D. W. C. *Science* **2011**, *334*, 1114-1117.

Enantioselective Organocatalysis: Gaunt, M. J; Johansson, C. C. C; McNally, A; Vo, N.T. *Drug Discov. Today* **2007**, *2*, 8-27.

Organocatalytic Sigmatropic Reactions: Development of a [2,3]-Wittig Rearrangement via Secondary Amine Catalysis: McNally, A.; Evans, B.; Gaunt, M. J. *Angew. Chem. Int. Ed.* **2006**, *45*, 2116-2119.

PRESENTATIONS AND AWARDS

2018 July	Eli Lilly Young Investigator Summer Seminar Series
2018 January	CU Boulder
2017 October	ACS Rocky Mountain Regional Meeting, Catalysis and Green Chemistry Symposium
2017 October	Denver University
2017 June	Heterocycles GRC, Salve Regina University
2017 April	ACS San Francisco
2016 August	ACS Young Talent in Colorado Symposium
2014 December	Thieme Chemistry Journal Award
2012 January	Washington University at St. Louis. Invited Lecture.
2011 July	RSC 22 nd International Symposium: Synthesis in Organic Chemistry. Cambridge University. Poster presenter & conference steward.
2011 June	Gordon Heterocyclic Chemistry Conference. Salve Regina University. Poster presenter.
2008 September	Merck Catalysis Centre Symposium. Invited Lecture at Rahway, New Jersey.
2006 October	Merck 2006 Research Fellowship. Finalist. Invited to IRBM, Rome.
2005 December	Pfizer poster symposium and medicinal chemistry workshop. Sandwich, UK. Awarded runner up prize.
2005 November	Pfizer Graduate Symposium. University of Cambridge. Graduate speaker. Organocatalytic Sigmatropic Reactions.
2005 July	19 th International Symposium: Synthesis in Organic Chemistry, University of Oxford, UK. Poster presentation
2005 May	The Merck Graduate Symposium, The University of Cambridge. Poster presentation.

TEACHING EXPERIENCE

University of Cambridge: *Undergraduate chemistry supervisor (current role).* All ranges of undergraduate from first year to final year chemistry courses. *Undergraduate lab demonstrator.* Teaching of basic through to advanced practical techniques. *Final year project supervisor.* Invention,

management and day-to-day supervision of undergraduate students (three individual cases) during final year project work. *Laboratory head of class*. Responsible staff member for undergraduate lab teaching includes grading and assessment of student lab coursework.

Princeton University. *Project management and mentorship*. Supervision and project management of graduate students. *Introductory lecture course for undergraduates*. Outline of research level organic synthesis for final year undergraduates and prospective graduate students.

Colorado State University

Chem 545 – Synthetic Organic Chemistry I. Graduate synthesis class encompassing modern aspects of organic chemistry including basic synthetic strategies, new synthetic methods, stereoselective synthesis, pericyclic reactions and asymmetric catalysis.

Chem 346 – Organic Chemistry II (Majors and honors class).

Chem 343– Organic Chemistry II (Non majors)

CURRENT STUDENTS

Year 1 – Jake Greenwood, Jeff Levy

Year 2 – Chirag Patel, Ryan Anderson, Patrick Fricke, Ben Boyle, Kyle Nottingham (joint with McNaughton lab)

Year 4 – Michael Hilton, Ryan Dolewski, Luke Koniarczyk

Undergraduate Students – Brianna Jett, Margaret Mohnike.

Postdoctoral Researcher – Xuan Zhang

GRANT AWARDS

NIH R01 – 1/1/2018-11/30/2022

NSF CAREER – Start Date April 1, 2018.

ACS Petroleum Research Fund Doctoral New Investigator Grant (DNI).

Thieme Chemistry Journal Award, 2014.

DEPARTMENTAL SERVICE

Graduate Admissions Committee (2014 to present).

Communications Committee (2015 to present).

Undergraduate Advising Committee (2015-2018).

Organic Sector Seminar Coordinator (2014-2018).