

John F. Bower

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Professional Appointments

2020 - Present **Regius Professor of Chemistry at the University of Liverpool**

2017 - 2020 **Professor of Chemistry at the University of Bristol**

2016 - 2017 **Reader in Organic Chemistry at the University of Bristol**

2015 - 2016 **Senior Research Fellow then Senior Lecturer in Organic Chemistry at the University of Bristol**

2014 - 2015 **Proleptic Lectureship in Organic Chemistry at the University of Bristol**

2010 - 2018 **Royal Society University Research Fellow at the University of Bristol**

2008 - 2010 **Postdoctoral Research Associate at the University of Oxford**
Advisor: Professor Timothy Donohoe
Research: The application of olefin metathesis to the synthesis of heteroaromatics.

2007 - 2008 **Postdoctoral Research Associate at the University of Texas at Austin**
Advisor: Professor Michael Krische
Research: The development of novel metal-catalysed carbon-carbon bond forming hydrogenations.

2007 **AstraZeneca Process Catalysis Group, Bristol, UK.**
Research: The identification and optimisation of highly general conditions for the Heck reaction.

2001 - 2002 **AstraZeneca Process Research and Development, Bristol, UK.**
Undergraduate industrial placement year.
Research: The identification of scalable synthetic routes to a variety of drug compounds.

Education

2003 - 2007 **Ph.D. in Organic Chemistry at the University of Bristol**
Advisor: Professor Timothy Gallagher
Research: The application of cyclic sulfamidates to the enantiospecific synthesis of *N*-heterocycles.

1999 - 2003 **MSci. (Hons) (1st Class) at the University of Bristol**
Degree: Chemistry with Industrial Experience

1997 - 1998 **Uppingham School, Rutland, UK.**
Extracurricular research undertaken with Dr. S. A. Cotton.
Research: The preparation and structural confirmation of novel lanthanide complexes.

Professional Affiliations

2014 - present Member of the International Society of Heterocyclic Chemistry (ISHC).
2014 - present Fellow of the Higher Education Academy (HEA).
2014 - present Member of the American Chemical Society (ACS).
2008 - present Member of the Royal Society of Chemistry (MRSC).
2003 - 2008 Associate Member of the Royal Society of Chemistry (AMRSC).

Awards, Prizes and Fellowships

2021 Liebig Lectureship of the German Chemical Society (GDCh).
2019 ERC Consolidator Investigator.
2016 Philip Leverhulme Prize.
2015 Royal Society of Chemistry Hickinbottom Award and associated Briggs Scholarship.
2014 ERC Starter Investigator.
2014 Junior Scientists' Programme Fellowship of the 49th "Bürgenstock Conference".
2013 Royal Society of Chemistry and Brazilian Meeting on Organic Synthesis Young Investigator Award.

2013	Royal Society of Chemistry Harrison-Meldola Memorial Prize.
2013	Thieme Chemistry Journal Award.
2010	Royal Society University Research Fellowship (URF).
2010	EPSRC Career Acceleration Fellowship (declined as URF accepted instead).
2007	Faculty of Science PhD Thesis Commendation.
2005	Syngenta Postgraduate Scholarship in Organic Chemistry.
2003	Mike Rothwell Prize from the University of Bristol.

Publications (h-index: 49)

108. B. T. Jones and J. F. Bower*; **The Narasaka/aza-Heck and related reactions** in *Organic Reactions*, C. D. Vanderwal (Ed.), Wiley-VCH, 2024, *Submitted*. (Invited book chapter)
107. L. P. R. Figueroa, R. L. de Carvalho, R. G. Almeida, E. R. S. Paz, E. B. T. Diogo, M. H. Araujo, W. S. Borges, V. F. S. Ramos, R. F. S. Menna-Barreto, J. M. Wood, J. F. Bower* and E. N. da Silva Júnior*; **Generation and capture of naphthoquinonynes: a new frontier in the development of trypanocidal quinones via aryne chemistry**. *Submitted*.
106. P. R. Ledwith, M. L. Cooney, K. A. Bahou, J. García-Cárceles, J. Thomson and J. F. Bower*; **A strategy for the formal C-N cross-coupling of tertiary amines**. *Angew. Chem. Int. Ed.* **2024**, *63*, *In press*.
105. W. Tu, J. J. Farndon, C. M. Robertson and J. F. Bower*; **An aza-Prilezhaev-based method inverts regioselectivity in stereospecific alkene 1,2-aminohydroxylations**. *Angew. Chem. Int. Ed.* **2024**, *63*, e202409836.
104. F. Hong, C. M. Robertson and J. F. Bower*; **An aza-enolate strategy enables iridium-catalyzed enantioselective hydroalkenylations of minimally polarized alkenes en route to complex N-aryl β^2 -amino acids**. *J. Am. Chem. Soc.* **2024**, *146*, 22923–22929.
103. R. L. de Carvalho, J. M. Wood, R. G. Almeida, N. G. Berry, E. N. da Silva Júnior* and J. F. Bower*; **The synthesis and reactivity of naphthoquinonynes**. *Angew. Chem. Int. Ed.* **2024**, *63*, e202400188.
102. F. Hong, T. P. Aldhous, P. D. Kemmitt and J. F. Bower*; **A directed enolization strategy enables byproduct free construction of contiguous stereocentres en route to complex amino acids**. *Nat. Chem.* **2024**, *16*, 1125–1132.
101. R. J. Adams, P. G. Pringle* and J. F. Bower*; **1,3,5,7-Tetramethyl-8-phenyl-2,4,6-trioxa-8-phosphatricyclo[3.3.1.1^{3,7}]decane** in *e-EROS Encyclopedia of Reagents for Organic Synthesis*, Wiley-VCH, 2024.
100. C. Jing, W. Mao and J. F. Bower*; **Iridium-catalyzed enantioselective alkene hydroalkylation via a heteroaryl-directed enolization-decarboxylation sequence**. *J. Am. Chem. Soc.* **2023**, *145*, 23918–23924.
99. M. J. S. Smith, W. Tu, C. M. Robertson and J. F. Bower*; **Stereospecific aminative cyclizations triggered by intermolecular aza-Prilezhaev alkene aziridination**. *Angew. Chem. Int. Ed.* **2023**, *62*, e202312797.
- Highlighted in *Org. Process Res. Dev.* DOI: 10.1021/acs.oprd.3c00460.
98. S. A. Scott, J. A. Cadge, G. K. Boden, J. F. Bower* and C. A. Russell*; **A hemilabile NHC-gold complex and its application to the redox neutral 1,2-oxyarylation of feedstock alkenes**. *Angew. Chem. Int. Ed.* **2023**, *62*, e202301526.
97. Y. Zhu, M. J. S. Smith, W. Tu and J. F. Bower*; **A stereospecific alkene 1,2-aminofunctionalization platform for the assembly of complex nitrogen containing ring systems**. *Angew. Chem. Int. Ed.* **2023**, *62*, e202301262.
96. O. O. Sokolova, A. G. Dalling and J. F. Bower*; **C-C bond activations of minimally activated cyclopropanes**. *Synlett*, **2023**, *34*, 1317–1326. (Invited Account article; contribution to a special issue in honour of Professor Masahiro Murakami).
95. J. A. Cadge, P. J. Gates, J. F. Bower* and C. A. Russell*; **Migratory insertion of CO into a Au-C bond**. *J. Am. Chem. Soc.* **2022**, *144*, 19719–19725.
94. C. Jing, B. T. Jones, R. J. Adams and J. F. Bower*; **Cyclopropane-fused N-heterocycles via aza-Heck triggered C(sp³)-H functionalization cascades**. *J. Am. Chem. Soc.* **2022**, *144*, 16749–16754.
93. P. Cooper, A. G. Dalling, E. H. E. Farrar, T. P. Aldhous, S. Grélaud, E. Lester, L. J. Feron, P. D. Kemmitt, M. N. Grayson,* and J. F. Bower*; **Atom and step economical synthesis of acyclic quaternary centers via iridium-catalyzed hydroarylation cross-coupling of 1,1-disubstituted alkenes**. *Chem. Sci.* **2022**, *13*, 11183–11189.

92. A. D. J. Calow, D. Dailier and J. F. Bower*; **Carbonylative N-heterocyclization via nitrogen-directed C-C bond activation of non-activated cyclopropanes.** *J. Am. Chem. Soc.* **2022**, *144*, 11069-11074.
91. O. O. Sokolova and J. F. Bower*; **An endo-directing group strategy unlocks enantioselective (3+1+2) carbonylative cycloadditions of aminocyclopropanes.** *Angew. Chem. Int. Ed.* **2022**, *61*, e202205007.
90. G. A. M. Jardim, R. L. de Carvalho, M. P. Nunes, L. A. Machado, L. D. Almeida, K. A. Bahou, J. F. Bower* and E. N. da Silva Júnior*; **Looking deep into C-H functionalization: the synthesis and application of cyclopentadienyl and related metal catalysts.** *Chem. Commun.* **2022**, *58*, 3101-3121. (Invited review article; contribution to a thematic collection on the "Functionalization of unreactive C-H bonds").
89. J. A. Cadge, J. F. Bower* and C. A. Russell*; **A systematic study of the effects of complex structure on aryl iodide oxidative addition at bipyridyl-ligated Au(I) centers.** *Angew. Chem. Int. Ed.* **2021**, *60*, 24976-24983.
88. B. T. Jones, J. García-Cárceles, L. Caiger, I. R. Hazelden, R. J. Lewis, T. Langer and J. F. Bower*; **Complex polyheterocycles and the stereochemical reassignment of pileamartine A via aza-Heck triggered aryl C-H functionalization cascades.** *J. Am. Chem. Soc.* **2021**, *143*, 15593-15598.
87. C. Jing, J. J. Farndon and J. F. Bower*; **Dearomatizing amination reactions.** *Chem. Rec.* **2021**, *21*, 2909-2926. (Invited review article; contribution to the 18th BMOS special issue; open access)
86. L. G. O'Neil and J. F. Bower*; **Electrophilic aminating agents in total synthesis.** *Angew. Chem. Int. Ed.* **2021**, *60*, 25640-25666. (Invited review article; open access)
85. T. P. Aldhous, R. W. M. Chung, A. G. Dalling and J. F. Bower*; **Enantioselective intermolecular Murai-type alkene hydroarylation reactions.** *Synthesis* **2021**, *53*, 2961-2975. (Invited review article; contribution to a special issue in honour of Professor Shinji Murai)
84. O. O. Sokolova and J. F. Bower*; **Selective carbon-carbon bond cleavage of cyclopropylamine derivatives.** *Chem. Rev.* **2021**, *121*, 80-109. (Invited review article; contribution to the 2021 thematic issue on "carbon-carbon bond cleavage in stereoselective synthesis")
83. L. Dantas-Pereira, E. F. Cunha-Junior, V. V. Andrade-Neto, J. F. Bower, G. A. M. Jardim, E. N. da Silva Júnior, E. C. Torres-Santos and R. F. S. Menna-Barreto*; **Naphthoquinones and derivatives for chemotherapy: perspectives and limitations of their anti-trypanosomatids activities.** *Curr. Pharm. Des.* **2021**, *27*, 1807-1824.
82. G.-W. Wang, O. O. Sokolova, T. A. Young, E. M. S. Christodoulou, C. P. Butts and J. F. Bower*; **Carbonylative C-C bond activation of aminocyclopropanes using a temporary directing group strategy.** *J. Am. Chem. Soc.* **2020**, *142*, 19006-19011.
81. J. G. Cárceles, K. Bahou and J. F. Bower*; **Recent methodologies that exploit C-N bond activation.** *ACS Catal.* **2020**, *10*, 12738-12759. (Invited review article)
80. J. M. Wood, N. S. Satam, R. G. Almeida, V. S. Cristani, D. P. Lima, L. D. Pereira, K. Salomão, R. F. S. Menna-Barreto, I. N. N. Namboothiri,* J. F. Bower* and E. N. da Silva Júnior*; **Strategies towards potent trypanocidal drugs: application of Rh-catalyzed [2+2+2] cycloadditions, sulfonyl phthalide annulation and nitroalkene reactions for the synthesis of substituted quinones and their evaluation against *Trypanosoma cruzi*.** *Bioorg. Med. Chem.* **2020**, *28*, 115565.
79. A. S. Henderson, J. F. Bower* and M. C. Galan*; **Pseudo-enantiomeric carbohydrate-based N-heterocyclic carbenes as promising chiral ligands for enantiotopic discrimination.** *Org. Biomol. Chem.* **2020**, *18*, 3012-3016. (Invited contribution to the themed collection on "Glycosylation: new methodologies for oligosaccharide and glycoconjugate synthesis and their applications")
78. J. A. Cadge, H. A. Sparkes, J. F. Bower* and C. A. Russell*; **Oxidative addition of alkenyl and alkynyl iodides to a Au(I) complex.** *Angew. Chem. Int. Ed.* **2020**, *59*, 6617-6621.
77. G.-W. Wang, O. Boyd, T. A. Young, S. M. Bertrand and J. F. Bower*; **Rhodacyclopentanones as linchpins for the atom economical assembly of diverse polyheterocycles.** *J. Am. Chem. Soc.* **2020**, *142*, 1740-1745.
76. J. M. Wood, E. N. da Silva Júnior* and J. F. Bower*; **Rh-catalyzed [2+2+2] cycloadditions with benzoquinones: de novo access to naphthoquinones for lignan and type II polyketide synthesis.** *Org. Lett.* **2020**, *22*, 265-269.
75. O. Boyd, G.-W. Wang, O. O. Sokolova, A. D. J. Calow, S. M. Bertrand and J. F. Bower*; **Modular access to eight-membered N-heterocycles by directed carbonylative C-C bond activation of aminocyclopropanes.** *Angew. Chem. Int. Ed.* **2019**, *58*, 18844-18848.

74. X. Ma, I. R. Hazelden, T. Langer, R. H. Munday and J. F. Bower*; **Enantioselective aza-Heck cyclizations of N-(tosyloxy)carbamates: synthesis of pyrrolidines and piperidines.** *J. Am. Chem. Soc.* **2019**, *141*, 3356-3360.
- Highlighted in *SYNFACTS* **2019**, *15*, 483.
73. A. G. Dalling, T. Yamauchi, N. G. McCreanor, L. Cox and J. F. Bower*; **Carbonylative C-C bond activation of electron-poor cyclopropanes: rhodium-catalyzed (3+1+2) cycloadditions of cyclopropylamides.** *Angew. Chem. Int. Ed.* **2019**, *58*, 221-225.
72. A. D. J. Calow and J. F. Bower*; **Rhodium(I)-catalyzed reductive carbon-carbon bond formation in Rhodium catalysis in organic synthesis: methods and reactions**, K. Tanaka (Ed.), Wiley-VCH, 2019, pp 133-160. (Invited book chapter)
71. J. J. Farndon, T. A. Young and J. F. Bower*; **Stereospecific alkene aziridination using a bifunctional amino-reagent: an aza-Prilezhaev reaction.** *J. Am. Chem. Soc.* **2018**, *140*, 17846-17850.
70. P. Cooper, G. E. M. Crisenza, L. J. Feron and J. F. Bower*; **Iridium-catalyzed α -selective arylation of styrenes by dual C-H functionalization.** *Angew. Chem. Int. Ed.* **2018**, *57*, 14198-14202.
69. S. Grélaud, P. Cooper, L. J. Feron and J. F. Bower*; **Branch-selective and enantioselective iridium-catalyzed alkene hydroarylation via anilide-directed C-H oxidative addition.** *J. Am. Chem. Soc.* **2018**, *140*, 9351-9356.
- Highlighted in *SYNFACTS* **2018**, *14*, 1165.
 - Highlighted in *Org. Process Res. Dev.* **2019**, *23*, 2287-2301.
68. A. G. Dalling and J. F. Bower*; **Synthesis of nitrogen heterocycles via directed carbonylative C-C bond activation of cyclopropanes.** *Chimia*, **2018**, *72*, 595-600. (Invited review article)
67. M. J. Harper, C. J. Arthur, J. Crosby, E. J. Emmett, R. L. Falconer, A. J. Fensham-Smith, P. J. Gates, T. Leman, J. E. McGrady,* J. F. Bower* and C. A. Russell*; **Oxidative addition, transmetalation and reductive elimination at a 2,2'-bipyridyl-ligated gold center.** *J. Am. Chem. Soc.* **2018**, *140*, 4440-4445. (open access)
66. I. R. Hazelden, R. C. Carmona, T. Langer, P. G. Pringle and J. F. Bower*; **Pyrrolidines and piperidines by ligand-enabled aza-Heck cyclizations and cascades of N-(pentafluorobenzoyloxy)carbamates.** *Angew. Chem. Int. Ed.* **2018**, *57*, 5124-5128. (open access)
65. G.-W. Wang and J. F. Bower*; **Modular access to azepines by directed carbonylative C-C bond activation of aminocyclopropanes.** *J. Am. Chem. Soc.* **2018**, *140*, 2743-2747. (open access)
64. X. Ma, J. J. Farndon, T. A. Young, N. Fey and J. F. Bower*; **A simple and broadly applicable C-N bond forming dearomatization protocol enabled by bifunctional amino-reagents.** *Angew. Chem. Int. Ed.* **2017**, *56*, 14531-14535. (open access)
- Highlighted in *Org. Process Res. Dev.* **2017**, *21*, 1873-1883.
63. J. J. Farndon, X. Ma and J. F. Bower*; **Transition metal free C-N bond forming dearomatizations and aryl C-H aminations by in situ release of a hydroxylamine-based aminating agent.** *J. Am. Chem. Soc.* **2017**, *139*, 14005-14008. (open access)
62. M. J. Harper, E. J. Emmett, J. F. Bower* and C. A. Russell*; **Oxidative 1,2-difunctionalization of ethylene via gold-catalyzed oxyarylation.** *J. Am. Chem. Soc.* **2017**, *139*, 12386-12389. (open access)
61. C. S. Buxton, D. C. Blakemore and J. F. Bower*; **Reductive coupling of acrylates with ketones and ketimines by a nickel-catalyzed transfer hydrogenative strategy.** *Angew. Chem. Int. Ed.* **2017**, *56*, 13824-13828. (open access)
- Highlighted in *SYNFACTS* **2018**, *14*, 21.
 - Highlighted in *Org. Process Res. Dev.* **2018**, *22*, 421-429.
60. N. J. Race, I. R. Hazelden, A. Faulkner and J. F. Bower*; **Recent developments in the use of aza-Heck cyclizations for the synthesis of chiral N-heterocycles.** *Chem. Sci.* **2017**, *8*, 5248-5260. (Invited contribution; open access perspective article)
59. G. A. M. Jardim, T. L. da Silva, M. O. F. Goulart, C. A. de Simone, J. M. C. Barbosa, K. Salomão, S. L. de Castro, J. F. Bower and E. N. da Silva Júnior*; **Rhodium-catalyzed C-H bond activation for the synthesis of quinonoid compounds: significant anti-*Trypanosoma cruzi* activities and electrochemical studies of functionalized quinones.** *Eur. J. Med. Chem.* **2017**, *136*, 406-419.

58. N. J. Race, A. Faulkner, G. Fumagalli, T. Yamauchi, J. S. Scott, M. Rydén-Landergren, H. A. Sparkes and J. F. Bower*; **Enantioselective Narasaka-Heck cyclizations: synthesis of tetrasubstituted nitrogen-bearing stereocenters.** *Chem. Sci.* **2017**, *8*, 1981-1985. (open access)
- Highlighted in *SYNFACTS* **2017**, *13*, 182.
 - Highlighted in *Org. Process Res. Dev.* **2017**, *21*, 279-291.
57. G. Fumagalli, S. Stanton and J. F. Bower*; **Recent methodologies that exploit C-C single bond cleavage of strained ring systems by transition metal complexes.** *Chem. Rev.* **2017**, *117*, 9404-9432. (Invited review article; contribution to the 2017 thematic issue on "C-H and C-C functionalisation")
56. N. J. Race and J. F. Bower*; **Synthesis of heteroaromatic compounds by alkene and enyne metathesis.** *Top. Heterocycl. Chem.* **2017**, *47*, 1-32. (Invited book chapter)
55. G.-W. Wang, N. G. McCreanor, M. H. Shaw, W. G. Whittingham and J. F. Bower*; **New initiation modes for directed carbonylative C-C bond activation: rhodium-catalyzed (3+1+2) cycloadditions of aminomethylcyclopropanes.** *J. Am. Chem. Soc.* **2016**, *138*, 13501-13504. (open access)
54. G. A. M. Jardim, J. F. Bower* and E. N. da Silva Júnior*; **Rh-catalyzed reactions of 1,4-benzoquinones with electrophiles: C-H iodination, bromination and phenylselenation.** *Org. Lett.* **2016**, *18*, 4454-4457.
53. N. G. McCreanor, S. Stanton and J. F. Bower*; **Capture-collapse heterocyclization: 1,3-diazepanes by C-N reductive elimination from rhodacyclopentanones.** *J. Am. Chem. Soc.* **2016**, *138*, 11465-11468. (open access)
52. M. H. Shaw and J. F. Bower*; **Synthesis and applications of rhodacyclopentanones derived from C-C bond activation.** *Chem. Commun.* **2016**, *52*, 10817-10829. (Invited contribution; open access review article)
51. I. R. Hazelden, X. Ma, T. Langer and J. F. Bower*; **Diverse N-heterocyclic ring systems via aza-Heck cyclizations of N-(pentafluorobenzoyloxy)sulfonamides.** *Angew. Chem.* **2016**, *128*, 11364-11368; *Angew. Chem. Int. Ed.* **2016**, *55*, 11198-11202. (open access)
50. G. E. M. Crisenza, E. Dauncey and J. F. Bower*; **C2-Alkenylation of N-heteroaromatic compounds via Brønsted acid catalysis.** *Org. Biomol. Chem.* **2016**, *14*, 5820-5825. (Invited contribution to the "2016 New Talent Special Issue"; open access)
49. A. S. Henderson, J. F. Bower* and M. C. Galan*; **Carbohydrates as enantioinduction components in stereoselective catalysis.** *Org. Biomol. Chem.* **2016**, *14*, 4008-4017. (open access review article)
48. G. A. M. Jardim, E. N. da Silva Júnior* and J. F. Bower*; **Overcoming naphthoquinone deactivation: rhodium-catalyzed C-5 selective C-H iodination as a gateway to functionalized derivatives.** *Chem. Sci.* **2016**, *7*, 3780-3784. (open access)
47. G. E. M. Crisenza and J. F. Bower*; **Branch selective Murai-type alkene hydroarylation reactions.** *Chem. Lett.* **2016**, *45*, 2-9. (Invited contribution; open access review article)
46. N. J. Race, A. Faulkner, M. H. Shaw and J. F. Bower*; **Dichotomous mechanistic behavior in Narasaka-Heck cyclizations: electron rich Pd-catalysts generate iminyl radicals.** *Chem. Sci.* **2016**, *7*, 1508-1513. (open access)
45. M. H. Shaw, W. G. Whittingham and J. F. Bower*; **Directed carbonylative (3+1+2) cycloadditions of amino-substituted cyclopropanes and alkynes: reaction development and increased efficiencies using a cationic rhodium system.** *Tetrahedron* **2016**, *72*, *Symposium-in-print, Catalytic C-C bond formation by C-H functionalization and C-C bond cleavage*, 2731-2741. (Invited contribution; open access)
44. G. E. M. Crisenza, O. O. Sokolova and J. F. Bower*; **Branch selective alkene hydroarylation by cooperative destabilization: iridium-catalyzed ortho-alkylation of acetanilides.** *Angew. Chem.* **2015**, *127*, 15079-15083; *Angew. Chem. Int. Ed.* **2015**, *54*, 14866-14870. (open access)
43. A. S. Henderson, S. Medina, J. F. Bower* and M. C. Galan*; **Nucleophilic aromatic substitution (S_NAr) as a facile approach to challenging carbohydrate-aryl ethers.** *Org. Lett.* **2015**, *17*, 4846-4849. (open access)
42. M. H. Shaw, R. A. Croft, W. G. Whittingham and J. F. Bower*; **Modular access to substituted azocanes via a rhodium-catalyzed cycloaddition-fragmentation strategy.** *J. Am. Chem. Soc.* **2015**, *137*, 8054-8057. (open access)
41. A. Faulkner, J. S. Scott and J. F. Bower*; **An umpolung approach to alkene carboamination: palladium catalyzed 1,2-amino-acylation, -carboxylation, -arylation, -vinylation and -alkynylation.** *J. Am. Chem. Soc.* **2015**, *137*, 7224-7230. (open access)
40. S. Medina, A. S. Henderson, J. F. Bower and M. C. Galan*; **Stereoselective synthesis of glycosides using (salen)Co catalysts as promoters.** *Chem. Commun.* **2015**, *51*, 8939-8941. (open access)

39. M. H. Shaw, N. G. McCreanor, W. G. Whittingham and J. F. Bower*; **Reversible C-C bond activation enables stereocontrol in Rh-catalyzed carbonylative cycloadditions of aminocyclopropanes.** *J. Am. Chem. Soc.* **2015**, *137*, 463-468. (open access)
38. A. S. Henderson, J. F. Bower* and M. C. Galan*; **Carbohydrate-based N-heterocyclic carbenes for enantioselective catalysis.** *Org. Biomol. Chem.* **2014**, *12*, 9180-9183. (Contribution to the "2015 RSC Prize and Award Winners Collection"; open access)
37. G. E. M. Crisenza, N. G. McCreanor and J. F. Bower*; **Branch selective iridium-catalyzed hydroarylation of monosubstituted alkenes via a cooperative destabilization strategy.** *J. Am. Chem. Soc.* **2014**, *136*, 10258-10261. (open access)
36. A. Faulkner, N. J. Race, J. S. Scott and J. F. Bower*; **Copper catalyzed Heck-like cyclizations of oxime esters.** *Chem. Sci.* **2014**, *5*, 2416-2421. (open access)
35. N. J. Race and J. F. Bower*; **Palladium catalyzed cyclizations of oxime esters with 1,2-disubstituted alkenes: synthesis of dihydropyrroles.** *Org. Lett.* **2013**, *15*, 4616-4619. (open access)
34. M. H. Shaw, E. Y. Melikhova, D. P. Kloer, W. G. Whittingham and J. F. Bower*; **Directing group enhanced carbonylative ring expansions of amino-substituted cyclopropanes: rhodium catalyzed multicomponent synthesis of N-heterobicyclic enones.** *J. Am. Chem. Soc.* **2013**, *135*, 4992-4995. (open access)
33. P. M. Murray,* J. F. Bower, D. K. Cox, E. K. Galbraith, J. S. Parker and J. B. Sweeney*; **A robust first-pass protocol for the Heck-Mizoroki reaction.** *Org. Process Res. Dev.* **2013**, *17*, 397-405.
32. A. Faulkner, J. S. Scott and J. F. Bower*; **Palladium catalyzed cyclizations of oxime esters with 1,1-disubstituted alkenes: synthesis of α,α -disubstituted dihydropyrroles and studies towards an asymmetric protocol.** *Chem. Commun.* **2013**, *49*, 1521-1523. (open access)
31. A. Faulkner and J. F. Bower*; **Highly efficient Narasaka-Heck cyclizations mediated by $P(3,5-(CF_3)_2C_6H_3)_3$: facile access to N-heterobicyclic scaffolds.** *Angew. Chem.* **2012**, *124*, 1707-1711; *Angew. Chem. Int. Ed.* **2012**, *51*, 1675-1679.
30. T. J. Donohoe,* J. F. Bower and L. K. M. Chan; **Olefin cross-metathesis for the synthesis of heteroaromatic compounds.** *Org. Biomol. Chem.* **2012**, *10*, 1322-1328.
- Highlighted as a "Hot" Emerging Area.
29. T. J. Donohoe,* J. F. Bower, D. B. Baker, J. A. Basutto, L. K. M. Chan and P. Gallagher; **Synthesis of 2,4,6-trisubstituted pyridines via an olefin cross-metathesis/Heck-cyclisation-elimination sequence.** *Chem. Commun.* **2011**, *47*, 10611-10613.
28. T. J. Donohoe,* J. A. Basutto, J. F. Bower and A. Rathi; **Heteroaromatic synthesis via olefin cross-metathesis: entry to polysubstituted pyridines.** *Org. Lett.* **2011**, *13*, 1036-1039.
27. J. F. Bower and M. J. Krische*; **Formation of C-C bonds via iridium catalyzed hydrogenation and transfer hydrogenation.** *Top. Organomet. Chem.* **2011**, *34*, 107-138.
26. T. J. Donohoe,* J. F. Bower and J. A. Basutto; **Olefin cross-metathesis based approaches to furans: procedures for the preparation of di- and trisubstituted variants.** *Nature Protocols* **2010**, *5*, 2005-2010.
25. T. J. Donohoe,* N. J. Race, J. F. Bower and C. K. A. Callens; **Substituted pyrroles via olefin cross-metathesis.** *Org. Lett.* **2010**, *12*, 4094-4097.
24. T. J. Donohoe* and J. F. Bower; **An expedient route to substituted furans via olefin cross-metathesis.** *Proc. Natl. Acad. Sci. U.S.A.* **2010**, *107*, 3373-3376.
- Highlighted in *Nature Chem.* **2010**, *2*, 244.
 - Commentary in *Proc. Natl. Acad. Sci. U.S.A.* **2010**, *107*, 3279-3280.
 - Highlighted as "Editors' Choice" in *Science* **2010**, *327*, 923.
23. J. F. Bower,* J. Rujirawanich and T. Gallagher*; **N-Heterocycle construction via cyclic sulfamidates. Applications in synthesis.** *Org. Biomol. Chem.* **2010**, *8*, 1505-1519.
22. T. J. Donohoe,* J. F. Bower, J. A. Basutto, L. P. Fishlock, P. A. Procopiou and C. K. A. Callens; **Ring-closing metathesis for the synthesis of heteroaromatics: evaluating routes to pyridines and pyridazines.** *Tetrahedron* **2009**, *65*, *Symposium-in-print, Modern applications of transition metal catalysis in heterocycle synthesis*, 8969-8980.

21. T. J. Donohoe,* L. P. Fishlock, J. A. Basutto, J. F. Bower, P. A. Procopiou and A. L. Thompson; **Synthesis of substituted pyridines and pyridazines via ring closing metathesis.** *Chem. Commun.* **2009**, 3008-3010.
20. J. F. Bower and M. J. Krische*; **Hydrogenation for C-C bond formation.** In *Handbook of Green Chemistry – Green Catalysis, Volume 1: Homogeneous Catalysis.* P. T. Anastas and R. H. Crabtree (Eds.), Wiley-VCH: Weinheim, **2009**, 205-254.
19. J. F. Bower, I. S. Kim, R. L. Patman and M. J. Krische*; **Catalytic carbonyl addition through transfer hydrogenation: a departure from preformed organometallic reagents.** *Angew. Chem.* **2009**, *121*, 36-48; *Angew. Chem. Int. Ed.* **2009**, *48*, 34-46.
18. R. L. Patman, J. F. Bower, I. S. Kim and M. J. Krische*; **Formation of C-C bonds via catalytic hydrogenation and transfer hydrogenation: vinylation, allylation and enolate addition of carbonyl compounds and imines.** *Aldrichimica Acta* **2008**, *41*, 95-104.
17. J. S. Parker,* J. F. Bower, P. M. Murray, B. Patel and P. Talavera; **Kepner-Tregoe decision analysis as a tool to aid route selection. Part 3. Application to a back-up series of compounds in the PDK project.** *Org. Process Res. Dev.* **2008**, *12*, 1060-1077.
16. F. Shibahara, J. F. Bower and M. J. Krische*; **Diene hydroacylation from the alcohol or aldehyde oxidation level via ruthenium-catalyzed C-C bond-forming transfer hydrogenation: synthesis of β,γ -unsaturated ketones.** *J. Am. Chem. Soc.* **2008**, *130*, 14120-14122.
15. R. L. Patman, V. M. Williams, J. F. Bower and M. J. Krische*; **Carbonyl propargylation from the alcohol or aldehyde oxidation level employing 1,3-enynes as surrogates to preformed allenyl metal reagents: a ruthenium catalyzed C-C bond forming transfer hydrogenation.** *Angew. Chem.* **2008**, *120*, 5298-5301; *Angew. Chem. Int. Ed.* **2008**, *47*, 5220-5223.
 - Highlighted in *Org. Process Res. Dev.* **2008**, *12*, 1021-1030.
14. F. Shibahara, J. F. Bower and M. J. Krische*; **Ruthenium catalyzed C-C bond forming transfer hydrogenation: carbonyl allylation from the alcohol or aldehyde oxidation level employing acyclic 1,3-dienes as surrogates to preformed allyl metal reagents.** *J. Am. Chem. Soc.* **2008**, *130*, 6338-6339.
 - Highlighted as "News of the Week" in *Chem. Eng. News* **2008**, *86*, 10.
 - Highlighted in *SYNFACTS* **2008**, 831.
13. J. F. Bower, R. L. Patman and M. J. Krische*; **Iridium catalyzed C-C coupling via transfer hydrogenation: carbonyl addition from the alcohol or aldehyde oxidation level employing 1,3-cyclohexadiene.** *Org. Lett.* **2008**, *10*, 1033-1035.
 - Highlighted in *SYNFACTS* **2008**, 505.
12. J. F. Bower, E. Skucas, R. L. Patman and M. J. Krische*; **Catalytic C-C coupling via transfer hydrogenation: reverse prenylation, crotylation and allylation from the alcohol or aldehyde oxidation level.** *J. Am. Chem. Soc.* **2007**, *129*, 15134-15135.
 - Highlighted in *SYNFACTS* **2008**, 293.
11. E. Skucas, J. F. Bower and M. J. Krische*; **Carbonyl allylation in the absence of preformed allyl metal reagents: reverse prenylation via iridium catalysed hydrogenative coupling of dimethylallene.** *J. Am. Chem. Soc.* **2007**, *129*, 12678-12679.
10. J. F. Bower, P. Szeto and T. Gallagher*; **Cyclic sulfamidates as precursors to alkylidene pyrrolidines and piperidines.** *Org. Lett.* **2007**, *9*, 4909-4912.
9. J. F. Bower, P. Szeto and T. Gallagher*; **Enantiopure 1,4-benzoxazines via 1,2-cyclic sulfamidates. Synthesis of levofloxacin.** *Org. Lett.* **2007**, *9*, 3283-3286.
8. J. F. Bower, A. J. Williams, H. Woodward, P. Szeto, R. M. Lawrence and T. Gallagher*; **Reactivity of cyclic sulfamidates towards phosphonate-stabilised enolates: synthesis and applications of α -phosphono lactams.** *Org. Biomol. Chem.* **2007**, *5*, 2636-2644.
7. J. F. Bower, T. Riis-Johannessen, P. Szeto, A. J. Whitehead and T. Gallagher*; **Stereospecific construction of substituted piperidines. Synthesis of (-)-paroxetine and (+)-laccarin.** *Chem. Commun.* **2007**, 728-730.
 - Highlighted in *SYNFACTS* **2007**, 574.
6. J. F. Bower, P. Szeto and T. Gallagher*; **Cyclic sulfamidates as versatile lactam precursors. An evaluation of synthetic strategies towards (-)-aphanorphine.** *Org. Biomol. Chem.* **2007**, *5*, 143-150.
5. J. F. Bower, S. Chakthong, J. Švenda, A. J. Williams, R. M. Lawrence, P. Szeto and T. Gallagher*; **Reactivity**

of cyclic sulfamidates towards sulfur-stabilised enolates. Stereocontrolled synthesis of functionalised lactams. *Org. Biomol. Chem.* **2006**, *4*, 1868-1877.

4. J. F. Bower, P. Szeto and T. Gallagher*; **Cyclic sulfamidates as lactam precursors. An efficient asymmetric synthesis of (-)-aphanorphine.** *Chem. Commun.* **2005**, 5793-5795.
3. J. F. Bower, J. Švenda, A. J. Williams, J. P. H. Charmant, R. M. Lawrence, P. Szeto and T. Gallagher*; **Cyclic sulfamidates as vehicles for the synthesis of substituted lactams.** *Org. Lett.* **2004**, *6*, 4727-4730.
2. J. F. Bower, S. A. Cotton,* J. Fawcett, R. S. Hughes and D. R. Russell; **Praseodymium complexes of 2,2'-bipyridine; the crystal and molecular structures of Pr(bipy)₃(NCS)₃, Pr(bipy)₂(NO₃)₃, Pr(bipy)₂Cl₃(OH₂)-EtOH and Pr(bipy)(S₂CNEt₂)₃.** *Polyhedron* **2003**, *22*, 347-354.
1. J. F. Bower, S. A. Cotton,* J. Fawcett* and D. R. Russell; **Bis(2,2'-bipyridyl-*N,N'*)tris(nitrato-*O,O'*)neodymium.** *Acta Cryst.* **2000**, *C56*, e8-e9.

Patents

2. University of Liverpool. "Alkylation process." United Kingdom Patent Application Number: GB2306313.4. Filed on April 28, 2023.
1. E. N. Da Silva Júnior, G. A. M. Jardim, J. F. Bower, T. L. Silva, M. O. F. Goulart, K. S. Salem, S. L. De Castro. "Preparation of substituted 1,4-naphthoquinones with trypanocidal activity, trypanocidal pharmaceutical compositions for treating Chagas disease" Brazil Patent Application Number: BR102018008669 A2. Filed on April 27, 2018.

Research Presentations

117. Plenary Lecture, International School on Organometallic Chemistry Marcial Moreno Mañas, Universitat Jaume I, Castellon, Spain, June 11-13, 2025.
116. Keynote Lecture, SCI Meeting on "Highlights in Catalysis, Photo- & Electrochemistry", London, February 11-12, 2025.
111. University of Toronto, Toronto, Canada, July 31, 2024.
110. Plenary Lecture, RSC Heterocyclic & Synthesis Group Postdoctoral Symposium, AstraZeneca, Macclesfield, May 21, 2024.
109. University of Edinburgh, May 1, 2024.
108. Alderley Park Lecture Series, Alderley Park, October 19, 2023.
107. Bath Interdisciplinary Computer-Aided Synthesis (ICAS) Symposium, University of Bath, September 7-8, 2023.
106. University of Cambridge, February 2, 2023.
105. Liebig Award Lecture, Technische Universität München, Germany, December 13, 2022.
104. Liebig Award Lecture, Albert-Ludwigs-Universität Freiburg, Germany, December 12, 2022.
103. Liebig Award Lecture, Justus-Liebig-Universität Gießen, Germany, December 9, 2022.
102. Liebig Award Lecture, Technische Universität Berlin, Germany, December 8, 2022.
101. Liebig Award Lecture, Westfälische Wilhelms-Universität Münster, Germany, December 7, 2022.
100. Liebig Award Lecture, Max-Planck-Institut für Kohlenforschung, Mülheim, Germany, December 6, 2022.
99. Invited Lecture, 18th Brazilian Meeting on Organic Synthesis (BMOS), Tiradentes, Brazil, October 17-22, 2022.
98. AstraZeneca, Cambridge, September 29, 2022.
97. Invited Lecture, 8th EuChemS Chemistry Congress, Lisbon, Portugal, August 28-September 1, 2022.
96. Invited Lecture, Gordon Research Conference on Stereochemistry, Salve Regina University, Newport, Rhode Island, USA, July 24-29, 2022.
95. Invited Lecture, Beilstein Organic Chemistry Symposium on "Stereoselective Alkene Functionalizations", Rüdeshheim, Germany, April 26-28, 2022.
94. Scripps Research, La Jolla, USA, February 25, 2022 (online).
93. Liebig Award Lecture, EurJOC-Liebig Symposium, November 17, 2021 (online).
92. Institut de Chimie des Substances Naturelles (ICSN), Gif-sur-Yvette, France, October 21, 2021 (online).
91. Invited Lecture, Cardiff Catalysis Institute Annual Conference, Cardiff, January 13-14, 2021 (online).
90. École Polytechnique Fédérale de Lausanne (EPFL), Switzerland, December 12, 2020 (online).
89. Institut Català d'Investigació Química (ICIQ), Tarragona, Spain, October 9, 2020 (online).

88. Imperial College, February 11, 2020.
87. UCB Pharma, Slough, November 22, 2019.
86. Invited Lecture, RSC-AstraZeneca Symposium: "New Frontiers in Synthetic Chemistry", Burlington House, London, November 19, 2019.
85. Pharmaron UK, Hoddesdon, October 18, 2019.
84. University of Basel, Switzerland, October 11, 2019.
83. Invited Lecture, Karl-Ziegler Symposium, GDCh-Wissenschaftsforum Chemie 2019 (WiFo 2019), Aachen, Germany, September 15-18, 2019.
82. Invited Lecture, 8th International Symposium on Advances in Synthetic and Medicinal Chemistry (EFMC-ASMC'19), Athens, Greece, September 1-5, 2019.
81. University of Leeds, May 9, 2019.
80. Merck, Rahway, USA, May 1, 2019
79. Princeton University, USA, April 30, 2019.
78. GlaxoSmithKline, Philadelphia, USA, April 29, 2019.
77. University of Liverpool, February 27, 2019.
76. AstraZeneca, Cambridge, February 19, 2019.
75. Shanghai University, Symposium on Nickel and Related Chemistry, China, November 6, 2018.
74. Keynote Lecture, GlaxoSmithKline Emerging Academics Symposium, Stevenage, October 25, 2018.
73. University of Strasbourg, France, October 8, 2018.
72. Invited Lecture, UK-India Symposium on Advances in Organic Chemistry, Jesus College, Oxford, September 28, 2018.
71. Invited Lecture, JGP Chem & ChemEn International Workshop: Sustainability-Oriented Organic Synthesis, Kyoto University, Katsura Campus, Kyoto, Japan, September 3-4, 2018.
70. Invited Lecture, 4th International Symposium on C-H Activation (ISCHA-4), Keio University, Yokohama, Japan, August 30-September 2, 2018.
69. Invited Lecture, 3rd International Symposium on Precisely Designed Catalysts with Customized Scaffolding, Osaka, Japan, August 29, 2018.
68. Genentech, San Francisco, USA, May 16, 2018.
67. Pfizer, La Jolla, USA, May 14, 2018.
66. University of Utah, USA, May 10, 2018.
65. University of Texas Southwestern Medical Center, Dallas, USA, May 8, 2018.
64. University of Texas at Austin, USA, May 7, 2018.
63. Bayer, Frankfurt, Germany, April 20, 2018.
62. University of Cambridge, January 18, 2018.
61. University of Geneva, Switzerland, November 28, 2017.
60. Lilly Pharmaceuticals, Erl Wood, October 9, 2017.
59. Invited Lectures (x 2), 2nd Summer School on Interfaces and Energy (ICASEC 2017), Göttingen, Germany, September 24-28, 2017
58. Syngenta Lectureship, Syngenta, Stein, Switzerland, September 21, 2017.
57. Invited Lecture, 26th International Society of Heterocyclic Chemistry (ISHC) Congress, Regensburg, Germany, September 3-8, 2017.
56. Invited Lecture, 25th International Symposium: Synthesis in Organic Chemistry, University of Oxford, July 17-20, 2017.
55. Invited Lecture, Cardiff-Bath-Bristol Centre for Doctoral Training in Catalysis Spring Conference, June 8, 2017.
54. Invited Lecture, Bioheterocycles 2017, XVII Conference on Heterocycles in Bioorganic Chemistry, Galway, Ireland, May 28-June 1, 2017.
53. Evotec Drug Discovery, Milton Park, April 19, 2017.
52. Evotec Lecture, University of Bath, March 7, 2017.
51. University of Sheffield, February 8, 2017.
50. University of Copenhagen, Denmark, November 3, 2016.

49. University of Oxford, October 13, 2016.
48. RSC nominated UK representative, EuCheMS Young Investigator Workshop, Huelva, Spain, September 16-18, 2016.
47. École Polytechnique Fédérale de Lausanne (EPFL), Switzerland, September 14, 2016.
46. ACS Organic Division Young Academic Investigators Symposium, 252nd ACS National Meeting and Exposition, Philadelphia, USA, August 21-25, 2016. (one of two speakers selected from Europe)
45. Invited Lecture, 4th RSC Early Careers Symposium, University of Strathclyde, June 23-24, 2016.
44. Hickinbottom Award Lecture, RSC Organic Division North-West Regional Meeting, University of Central Lancashire, May 18, 2016.
43. University of Birmingham, May 17, 2016.
42. University of York, May 11, 2016.
41. Invited Lecture, 5th UK-Japanese Symposium on Asymmetric Catalysis, University of Manchester, March 14-15, 2016.
40. Lilly Pharmaceuticals, Erl Wood, February 19, 2016.
39. University of Warwick, February 1, 2016.
38. Werner Chemical Society Invited Lecture, Trinity College Dublin, Ireland, January 22, 2016.
37. East China University of Science and Technology, Shanghai, China, January 14, 2016.
36. Shanghai Institute of Organic Chemistry, China, January 13, 2016.
35. East China Normal University, Shanghai, China, January 12, 2016.
34. Fudan University, Shanghai, China, January 11, 2016.
33. Mini Symposium on Organometallics in Synthesis, University of Nottingham, December 16, 2015.
32. Hickinbottom Award Lecture, University of Liverpool, December 2, 2015.
31. Gordon Stone Symposium, University of Bristol, November 4, 2015.
30. Hickinbottom Award Lecture, Queen Mary University of London, October 21, 2015.
29. GlaxoSmithKline Emerging Academics Symposium, Stevenage, October 20, 2015.
28. Heidelberg University-Bristol University Catalysis Workshop, Heidelberg, Germany, September 15, 2015.
27. Invited Lecture, 35th Meeting of the Spanish Royal Society of Chemistry, A Coruña, Spain, July 19-23, 2015.
26. Cardiff University, January 16, 2015.
25. Invited Lecture, RSC Heterocyclic Group Meeting, Institute of Cancer Research, Chelsea, January 9, 2015.
24. AstraZeneca, Macclesfield, November 27, 2014.
23. Institute of Cancer Research, Sutton, May 22, 2014.
22. Harrison-Meldola Memorial Prize Lecture, RSC Organic and Dalton Division North-West Regional Meeting, University of Manchester, May 15, 2014.
21. Short Talk, 49th "Bürgenstock Conference", Brunnen, Switzerland, May 5, 2014.
20. Invited Lecture, Young Chemists' Conference, Imperial College, April 4, 2014.
19. Harrison-Meldola Memorial Prize Lecture, Imperial College, January 23, 2014.
18. Keynote Lecture (Harrison-Meldola Memorial Prize), 42nd Scottish Regional Meeting of the Organic Division of the RSC, Heriot-Watt University, December 18, 2013.
17. Universidade Estadual de Campinas (UNICAMP), Brazil, November 21, 2013.
16. Universidade de São Paulo, City of São Paulo Campus, Brazil, November 19, 2013.
15. Universidade Federal de Minas Gerais, Belo Horizonte, Brazil, November 18, 2013.
14. 15th Brazilian Meeting on Organic Synthesis (BMOS), Campos do Jordão, Brazil, November 10-13, 2013.
13. Pfizer Neusentis Synthesis and Catalysis Symposium, University of Cambridge, November 1, 2013.
12. Lilly Pharmaceuticals, Erl Wood, July 18, 2013.
11. University of Texas at Austin, USA, May 16, 2013.
10. Nanyang Technological University, Singapore, November 26, 2012.
9. Osaka University (Suita Campus), Japan, November 22, 2012.
8. Osaka University (Toyonaka Campus), Japan, November 21, 2012.

7. Nagoya University, Japan, November 20, 2012.
6. Gifu University, Japan, November 19, 2012.
5. Kyoto University-Bristol University Organic Synthesis Workshop, Kyoto, Japan, November 16-17, 2012.
4. Invited Lecture, International Isotope Society UK Group Conference, University of Cambridge, October 12, 2012.
3. Mini Symposium on Catalysis in Organic Synthesis, University of Nottingham, March 28, 2012.
2. Wilson Baker Symposium, University of Bristol, March 14, 2012.
1. SCI Young Chemists' Panel "Innovations in Chemical Synthesis", SCI, London, December 2, 2011.