Dr. Sebastian D. Pike

sebastian.pike@warwick.ac.uk, 02476 5 22598, website: https://warwick.ac.uk/pikegroup/

Orcid identifier: 0000-0002-9791-5244, Web of Science Researcher ID AAG-7483-2021

Education:

2011-2014: **D.Phil.**, University of Oxford (Balliol College), Supervisor: Prof. A. S. Weller

Thesis: 'Cationic Rhodium Bis-Phosphine Complexes: Solid State and Solution Reactivity'

2006-2010: **M.Chem. (First Class)**, University of Oxford (Magdalen College)

Thesis: 'Exploring New Hydroacylation Catalysts Based on Rhodium Phosphine Systems'

Employment:

2019-present: **Royal Society University Research Fellow**, University of Warwick

- Principal Investigator of independent research group
- Research focussed on the photochemistry of metal-oxo clusters and oxide materials
- Module leader for CH403 'Polar Organometallic Reagents in Synthesis' 4th year course (5 Lectures) & Inorganic Chemistry Tutor for undergraduates.

2016-2019: **Herchel Smith Postdoctoral Research Fellow**, University of Cambridge and **Fellow** of Corpus Christi College Cambridge.

- Independent research on the topic of molecular metal-oxo clusters.
- Principle Investigator of research group

2014-2016: **Post-Doctoral Research Associate**, Imperial College London. Research groups of Prof. Charlotte Williams and Prof. Milo Shaffer.

- Studied the synthesis and characterisation of ZnO and Cu nanoparticles for use as catalysts for the hydrogenation of CO_2 to methanol.

2014: **Post-Doctoral Research (EPSRC Doctoral Prize Award 2013)**, University of Oxford.

2011-2014: **D.Phil.**, University of Oxford. Research group of Prof. Andrew Weller

Grants and Fellowships:

- **Royal Society University Research Fellowship**, 2019
- **Herchel Smith Postdoctoral Research Fellowship**, 2016
- **EPSRC Doctoral Prize Award**, 2013: (EP/L505031/1).

Teaching:

Current, University of Warwick

- Module Leader, CH403 metal-organic Chemistry, 4th Year Module
- Inorganic Chemistry Tutor, 2nd year 'Transition Metal Chemistry'

Previous, University of Cambridge, Imperial College London and University of Oxford

- Lecturer, Uni. Cambridge. 'Coordination Chemistry' 2017-2019 to 2nd Year Natural Sciences.
- Senior Demonstrator, Uni. Cambridge, 2nd Year undergraduate laboratories 2017 & 2018.
- Fellow of Corpus Christi College Cambridge 2016-present (supervisions and admission interviews).
- Supervision of B.Sc., M.Chem. M.Sci and Ph.D. students 2012-2018 (Cambridge, Imperial College London and Oxford).
- 'Lecturer II' in Inorganic Chemistry (~70 hours), 2012/2013 (Magdalen College, Oxford).

Conferences and Communication:

- Invited Seminars: Warwick, 2019; UCL, 2020; York, 2020, NUS (Singapore, Young group), 2020
- Conference Presentations:
    - ACS 2020 (Philadelphia)
    - Solar Fuels Network Symposium 2019 (Cambridge),
    - ICOMC 2018 (Florence),
    - Dalton 2018 (Warwick)
    - Dalton Young Members Events 2017 (Bath)
    - Dalton 2016 (Warwick)
    - MICRA 2016 (Bath)
    - Dalton Young Members Events 2015 (Leeds)
    - EUCOMC 2013 (St. Andrews).
- General Committee Member RSC Twitter Conference 2021

Outreach:

- Offer-Holder Open Day, University of Warwick, 2021
- 'Experiencing Cambridge', Corpus Christi College, Summer School, July 2018
- 'Insight' GCSE students visit, University of Cambridge, April 2017
- Imperial College Festival, 2015 and 2016.

Publications:

Corresponding Author Publications:

1. T. Krämer, F. Tuna, **S. D. Pike***, **Chemical Science**, 2019, 10, 6886-6898, "Photo-redox reactivity of titanium-oxo clusters: mechanistic insight into a two-electron intramolecular process, and structural characterisation of mixed-valent Ti(III)/Ti(IV) products"
2. H. Lu, V. Andrei, K. J. Jenkinson, A. Regoutz, N. Li, A. E. H. Wheatley, H. Hao, E. Reisner*, D. S. Wright*, **S. D. Pike***, **Advanced Materials**, 2018, 1804033, "Single-Source Bismuth (Transition Metal) Polyoxovanadate Precursors for the Scalable Synthesis of Doped $BiVO_4$ Photoanodes"
3. R. J. Murray-Watson, **S. D. Pike***, **Organometallics**, 2020, 39, 20, 3759–3767, "Exploring the Synthesis and Coordination Chemistry of Pentafluorophenylcopper: Organocopper Polyanions and Coordination Networks".
4. H. Lu, D. S. Wright*, **S. D. Pike***, **Chem. Commun**., 2020, 56, 854-871, "The use of mixed-metal single source precursors for the synthesis of complex metal oxides" ***Invited review***
5. H. Lu, R. B. Jethwa, K. J. Jenkinson, A. E. H. Wheatley, H. Hao, D. S. Wright,* **S. D. Pike***, **Dalton Trans**, 2019, 56, 854 "A simple one-step synthetic route to access a range of metal-doped polyoxovanadate clusters"
6. J. A. Garden*, **S. D. Pike***, **Dalton Trans.**, 2018, 47, 3638, "Hydrolysis of organometallic and metal-amide precursors: Synthesis routes to oxo-bridged heterometallic complexes, metal-oxo clusters and metal oxide nanoparticles" ***Invited review***
7. **S. D. Pike***, M. R. Crimmin*, A. B. Chaplin*, **Chem. Commun.** 2017, 53, 3615 "Organometallic Chemistry using Partially Fluorinated Benzenes."
8. **S. D. Pike*,** I. Pernik, R. Theron, J. S. McIndoe,* A. S. Weller*, **J. Organomet. Chem.,** 2015, 784, 75: "Relative Binding Affinities of Fluorobenzene Ligands in Cationic Rhodium Bisphosphine η^6 Fluorobenzene Complexes Probed Using Collision-Induced Dissociation."
9. **S. D. Pike*** and A. S. Weller*, **Phil. Trans. R. Soc. A**, 2015, 373, 20140187: "Organometallic Synthesis, Reactivity and Catalysis in the Solid–State Using Well–Defined Single Site Species."

Other Publications:

10. **S. D. Pike**, A. L. Thompson, A. s. G. Algarra, D. C. Apperley, S. A. Macgregor*, A. S. Weller*, **Science**, 2012, 337, 1648-1651: "Synthesis and Characterization of a Rhodium(I) σ-Alkane Complex in the Solid State." *Highlighted in Diamond Light Source Annual Review 2012/13.*
11. **S. D. Pike**, E. R. White, M. S. P. Shaffer*, C. K. Williams*, **Nature Comm.** 2016, 7, 13008: "Simple Phosphinate Ligands Access Zinc Clusters Identified in the Synthesis of Zinc Oxide Nanoparticles."
12. **S. D. Pike**, F. M. Chadwick, N. H. Rees, M. P. Scott, A. S. Weller*, T. Kramer, S. M. Macgregor*, **J. Am. Chem. Soc.**, 2015, 137, 820: "Solid-State Synthesis and Characterization of σ-Alkane Complexes."
13. **S. D. Pike**, E. R. White, A. Regoutz, N. Sammy, D. J. Payne, C. K. Williams*, and M. S. P. Shaffer*, **ACS Nano**. 2017, 11, 22714 "Reversible Redox Cycling of Well-Defined, Ultrasmall Cu/Cu_2O Nanoparticles."
14. **S. D. Pike**, A. García-Trenco, E. R. White, A. H. M. Leung, J. Weiner, M. S. P. Shaffer* and C. K. Williams*, **Cat. Sci. Tech**., 2017, 7, 3842 "Colloidal Cu/ZnO Catalysts for the Hydrogenation of Carbon Dioxide to Methanol: Investigating Catalyst Preparation and Ligand Effects" ***Selected as HOT article for 2017.***
15. **S. D. Pike**, T. Kramer, N. H. Rees, S. M. Macgregor*, A. S. Weller*, **Organometallics**, 2015, 34, 1487: "Stoichiometric and Catalytic Solid-Gas Reactivity of Rhodium Bis-Phosphine Complexes." ***Front Cover Image: Vol 34, Issue 8, April 27 2015.***
16. **S. D. Pike**, A. S. Weller*, **Dalton Trans.**, 2013, 42, 12832: "C–Cl Activation of the Weakly Coordinating Anion $[B(3,5–C_6H_3Cl_2)_4]^-$ at a Rh(I) Centre in Solution and the Solid–State."
17. **S. D. Pike**, R. J. Pawley, A. B. Chaplin, A. L. Thompson, J. A. Hooper, M. C. Willis*, A. S. Weller*, **Eur. J. Inorg. Chem.**, 2011, 36, 5558: "Exploring $(Ph_2PCH_2CH_2)_2E$ Ligand Space (E = O, S, PPh) in Rh(I) Alkene Complexes as Potential Hydroacylation Catalysts."
18. A. H. M. Leung, **S. D. Pike**, A. J. Clancy, H. C. Yau, W. J. Lee, K. L. Orchard, M. S. P. Shaffer* and C. K. Williams*, **Chem. Sci**., 2018, 9, 2135 "Layered zinc hydroxide monolayers by hydrolysis of organozincs"
19. A. H. M. Leung, A. Garcia-Trenco, A. Phanopoulos, A. Regoutz, M. E. Schuster, **S. D. Pike**, M. S. P. Shaffer*, C. K. Williams*, **J. Mater. Chem. A.**, 2020, 8, 11282, "Cu/M:ZnO (M = Mg, Al, Cu) colloidal nanocatalysts for the solution hydrogenation of carbon dioxide to methanol".
20. S. K. Sehmi, C. Lourenco, K. Alkhuder, **S. D. Pike**, S. Noimark, C. K. Williams, M. S. P. Shaffer, I. P. Parkin*, A. J. MacRobert*, E. Allan*, **ACS Infectious Diseases**, 2020, 6, 5, 939. "Antibacterial Surfaces with Activity against Antimicrobial Resistant Bacterial Pathogens and Endospores".
21. A. Kumar, N. A. Beattie, **S. D. Pike**, S. A. Macgregor*, A. S. Weller*, **Angew. Chem. Int. Ed.**, 2016, *55*, 6651: "The Simplest Amino-borane $H_2B{=}NH_2$ Trapped on a Rhodium Dimer."
22. A. Prades, M. Fernandez, **S. D. Pike**, M. C. Willis*, A. S. Weller*, **Angew. Chem. Int. Ed.**, 2015, 54, 8520: "Well-Defined and Robust Rhodium Catalysts for the Hydroacylation of Terminal and Internal Alkenes."
23. H. C. Johnson, C. L. McMullin, **S. D. Pike**, S. A. Macgregor*, A. S. Weller*, **Angew. Chem. Int. Ed.**, 2013, 52, 9776: "Dehydrogenative B-B Homocoupling of an Amine-Borane: A New Mode of Reactivity."
24. T. N. Hooper, M. A. Huertos, **S. D. Pike**, T. Jurca, A. S. Weller*, I. Manners*, **Inorg. Chem.**, 2014, 53, 3716: "Effect of the Phosphine Steric and Electronic Profile on the Rh-Promoted Dehydrocoupling of Phosphine-Boranes."

25. P. Ren, **S. D. Pike**, I. Pernik, A. S. Weller* and M. C. Willis*, **Organometallics**, 2015, 34, 1137: "Rh-POP Pincer Xantphos Complexes for C-S and C-H Activation. Implications for Carbothiolation Catalysis"
26. G. M. Adams, F. M. Chadwick, **S. D. Pike**, A. S. Weller*, **Dalton Trans.**, 2015, 44, 6340: "A CH_2Cl_2 complex of a $[Rh(pincer)]^+$ cation."
27. S. K. Sehmi, S. Noimark, **S. D. Pike**, J. C. Bear, W. J. Peveler, C. K. Williams, M. S. P. Shaffer, E. Allan, I. P. Parkin, A. J. Macrobert*, **ACS Omega**, 2016, 1, 334: "Enhancing the Antibacterial Activity of Light-Activated Surfaces Containing Crystal Violet and ZnO Nanoparticles: Investigation of Nanoparticle Size, Capping Ligand, and Dopants."