Michael S. Inkpen

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Appointments

Assistant Professor of Chemistry, Department of Chemistry, University of Southern California, USA — 2019-Present

Education

Ph.D. in Organometallic Chemistry — 2008-2013
Imperial College London, UK (Advisors: Prof. Nicholas J. Long, Prof. Tim Albrecht)
Thesis title: "Branched organometallic complexes for molecular electronics"

M.Chem. w/ Industrial Project, 1st class Honours — 2004-2008
Durham University, UK
Thesis title: "The controlled release of volatile organic molecules from dry paint films"

Research Experience

Marie Skłodowska-Curie Fellow — 2015-2018
Columbia University, USA and University of Rennes 1, France (Advisors: Prof. Latha Venkataraman and Prof. Philippe Hapiot)

Research Associate, Imperial College London, UK — 2013-2015
Advisors: Prof Nicholas J. Long, Prof Tim Albrecht

Ph.D. Student, Imperial College London, UK — 2008-2013
Advisors: Prof Nicholas J. Long, Prof Tim Albrecht

Research Student, ICI Paints/AkzoNobel, Slough, UK — 2007-2008
Advisors: Tom Munhoven, Manish Sarkar

Honors, Fellowships and Awards

ACS Postdoc to Faculty (P2F) Workshop, Washington, DC — 2017

MRSEC Three-Minute Pitch, Columbia University, USA — 2016

Marie Skłodowska-Curie Global Fellowship, European Commission — 2015-2018

Travel Grant, Faraday Division, Royal Society of Chemistry — 2014

Imperial Postdoc Sandpit Challenge, Imperial College London, UK — 2013

GlaxoSmithKline Book Prize, Durham University, UK — 2005

Professional Activities

Professional Affiliations: Member of the American Chemical Society (2016-present), Royal Society of Chemistry (2013-present), International Society of Electrochemistry (2014-present).

Ad Hoc Referee for the Following Journals: *Nature Reviews Physics*; *Journal of the American Chemical Society*; *Journal of the American Chemical Society Au; Science Advances*; *Nano Letters*; *Chemical Science*; *Analytical Chemistry*; *Nanoscale*; *Chemical Communications; Journal of Physical Chemistry*; *European Journal of Inorganic Chemistry*; *Journal of Physics: Condensed Matter*; *Advanced Functional Materials*; *Physical Chemistry Chemical Physics*; *Current Opinion in Electrochemistry* (https://publons.com/a/1475443).

Conference Abstract Reviewer: Poster Abstract Reviewer for NOBCChE Conference (2020-present).

Organized Symposia: COLL Symposium on "The Chemistry of Molecular Electronics" for *ACS National Meeting* (Spring 2018); PHYS Symposium on "The Chemistry of Molecular Electronics" for *ACS National Meeting* (Spring 2021).

Database Curation: Development of a free, web-based, publicly accessible database containing information about every molecule that has ever been studied in a molecular junction. The "Molecular Junction Database" (MJD) will be searchable by simple string-based queries (author, title, year of publication), in addition to sub-structure and exact molecular structure searching using 3rd party cheminformatics web tools.

Publications

Key: * indicates corresponding author(s); † indicates co-first authors (equal contribution); mentored postdoctoral scholar[PD], graduate[GR], or undergraduate[UG] student.

1) J. M. Parr[GR], C. Olivar[GR], T. Saal, R. Haiges, **M. S. Inkpen***, "An improved route to osmium(IV) tetraaryl complexes", submitted. [https://doi.org/10.26434/chemrxiv.12830384.v1]

Peer Reviewed Journal Articles Prior to USC

19) M. Camarasa-Gómez†, D. Hernangómez-Pérez†, **M. S. Inkpen***, G. Lovat, E.-D. Fung, X. Roy, L. Venkataraman*, and F. Evers*, "Mechanically Tunable Quantum Interference in Ferrocene-Based Single-Molecule Junctions", *Nano Lett.*, 2020, **20**, 6381

18) Y. Zang†, I. Stone†, **M. S. Inkpen**, F. Ng, T. H. Lambert, C. Nuckolls, M. L. Steigerwald, X. Roy*, L. Venkataraman*, "In situ coupling of single molecules driven by Au-catalyzed electrooxidation", *Angew. Chem. Int. Ed.*, 2019, **58**, 16008

17) **M. S. Inkpen***, Z.-F. Liu, H. Li, L. M. Campos, J. B. Neaton, L. Venkataraman*, "Non-chemisorbed gold-sulfur binding prevails in self-assembled monolayers" *Nature Chem.*, 2019, **11**, 351

- "A not-so-strong bond" (G. Pacchioni, *Nature Rev. Mater.*, 2019, **4**, 226)

16) G. Lovat, E. A. Doud, D. Lu, G. Kladnik, **M. S. Inkpen**, M. L. Steigerwald, D. Cvetko, M. S. Hybertsen, A. Morgante, X. Roy, L. Venkataraman, "Determination of the structure and geometry of N-heterocyclic carbenes on Au(111) using high-resolution spectroscopy", *Chem. Sci.*, 2019, **10**, 930

15) E. A. Doud†, **M. S. Inkpen†**, G. Lovat, E. Montes, D. W. Paley, M. L. Steigerwald, H. Vázquez*, L. Venkataraman*, X. Roy*, "*In Situ* Formation of N-Heterocyclic Carbene-Bound Single-Molecule Junctions", *J. Am. Chem. Soc.*, **140**, 8944

14) H. Li, T. A. Su, M. Camarasa-Gómez, D. Hernangómez-Pérez, S. E. Henn, V. Pokorný, C. D. Caniglia, **M. S. Inkpen**, R. Korytár, M. L. Steigerwald*, C. Nuckolls*, F. Evers*, L. Venkataraman*, "Silver Makes Better Electrical Contacts to Thiol Terminated Silanes than Gold", *Angew. Chem. Int. Ed.*, 2017, **56**, 14145

13) R. Leber, L. E. Wilson, P. Robaschik, **M. S. Inkpen**, D. Payne, N. J. Long, T. Albrecht, C. F. Hirjibehedin and S. Heutz*, "High vacuum deposition of biferrocene thin films on room temperature substrates", *Chem. Mater.*, 2017, **29**, 8663

12) H. Li, M. H. Garner, T. A. Su, A. Jensen, **M. S. Inkpen**, M. L. Steigerwald*, L. Venkataraman*, G. C. Solomon*, C. Nuckolls*, "Extreme Conductance Suppression in Molecular Siloxanes", *J. Am. Chem. Soc.*, 2017, **139**, 10212

- "1D nanowire is world's worst conductor", *Chemistry World* (print issue: 07/2017)
- "Siloxane nanowires are world's worst conductor", *Compound Interest*

11) O. A. Al-Owaedi, S. Bock, D. Costa-Milan, M. Oerthel, **M. S. Inkpen**, D. S. Yufit, A. N. Sobolev, N. J. Long, T. Albrecht, S. Higgins, M. R. Bryce, R. J. Nichols*, C. Lambert* and P. Low*, "Insulated molecular wires: inhibiting orthogonal contacts in metal complex based molecular junctions", *Nanoscale*, 2017, **9**, 9902

10) **M. S. Inkpen***, Y. R. Leroux, P. Hapiot, L. M. Campos and L. Venkataraman*, "Reversible on-surface wiring of resistive circuits", *Chem. Sci.*, 2017, **8**, 4340

9) M. Lemmer, **M. S. Inkpen**, K. Kornysheva, N. J. Long and T. Albrecht*, "Unsupervised vector-based classification of single-molecule charge transport data", *Nature Commun.*, 2016, **7**, 12922

8) **M. S. Inkpen**, S. Scheerer, M. Linseis, A. J. P. White, R. F. Winter, T. Albrecht* and N. J. Long*, "Oligomeric ferrocene rings", *Nature Chem.*, 2016, **8**, 825
   - "Molecule of the Year", the cyclic hexamer was one of seven molecules nominated by *C&EN*, coming third in their online poll (print issue: 2016-12-19)
   - Journal front cover (*Nature Chem.*, 2016, **8**(9))
   - News and Views (R. A. Musgrave and I. Manners, *Nature Chem.*, 2016, **8**, 819)
   - "Presenting a ferrocene Ferris wheel", *C&EN* (print issue: 2016-07-04)
   - "Bringing ferrocene full circle", *Chemistry World* (print issue: 2016-08)

7) **M. S. Inkpen**, A. J. P. White, T. Albrecht* and N. J. Long*, "Complexes comprising 'dangling' phosphorous arms and tri(hetero)metallic butenynyl moieties", *J. Organomet. Chem.*, 2016, **812**, 145

6) **M. S. Inkpen**†, S. Du†, M. Hildebrand, A. J. P. White, N. M. Harrison, T. Albrecht* and N. J. Long*, "The unusual redox properties of fluoroferrocenes revealed through a comprehensive study of the haloferrocenes", *Organometallics*, 2015, **34**, 5461

5) **M. S. Inkpen***, M. Lemmer, N. Fitzpatrick, D. Costa-Milan, R. J. Nichols, N. J. Long* and T. Albrecht*, "New insights into single-molecule junctions using a robust, unsupervised approach to data collection and analysis", *J. Am. Chem. Soc.*, 2015, **137**, 9971

4) **M. S. Inkpen**, A. J. P. White, T. Albrecht* and N. J. Long*, "Avoiding problem reactions at the ferrocenyl-alkyne motif: a convenient synthesis of model, redox-active complexes for molecular electronics", *Dalton Trans.*, 2014, **43**, 15287

3) **M. S. Inkpen**, T. Albrecht* and N. J. Long*, "Branched redox-active complexes for the study of novel charge transport processes", *Organometallics*, 2013, **32**, 6053

2) **M. S. Inkpen**, A. J. P. White, T. Albrecht* and N. J. Long*, "Rapid Sonogashira cross-coupling of iodoferrocenes and the unexpected cyclo-oligomerization of 4-ethynylphenylthioacetate", *Chem. Commun.*, 2013, **49**, 5663

1) **M. S. Inkpen**, S. Du, M. Driver, T. Albrecht* and N. J. Long*, "Oxidative purification of halogenated ferrocenes", *Dalton Trans.*, 2013, **42**, 2813

Other Journal Articles and Book Chapters Prior to USC

2) **M. S. Inkpen** and N. J. Long*, "Metal σ–alkynyl complexes as molecular wires: a comparative study of electron density and delocalisation" in *Molecular Design and Applications of Photofunctional Polymers and Materials,* eds. W. -Y. Wong and A. S. Abd-El-Aziz, Royal Society of Chemistry, 2012 (book chapter)

1) **M. S. Inkpen** and T. Albrecht*, "Probing electron transport in proteins at room temperature with single-molecule precision", *ACS Nano*, 2012, **6**, 13 (perspective article)

Invited Presentations (since 2019)

5) "Charge transport and self-assembly at the single-molecule limit", University of Southern California, Los Angeles, CA, USA; April 21, 2021 (Department of Physics)
4) "Metal(IV) tetraaryl complexes", *National Meeting of the American Chemical Society*, Virtual Meeting; April 05-16, 2021
3) "Metal-appended wires and framework fragments", *(Bio)Molecular Electronics Colloquia*, Virtual Meeting; December 10, 2020 (University of Liverpool, UK)
2) "Building materials with chargeable molecular Legos", California State University, Los Angeles, CA, USA; September 17, 2019
1) "Extended molecular materials constructed from redox-active building blocks", *National Meeting of the American Chemical Society*, San Diego, CA, USA; August 25-29, 2019

Contributed Presentations (since 2019)

2) "Charge transport through single-molecule framework fragments", *National Meeting of the American Chemical Society*, Virtual Meeting; April 05-16, 2021
1) "Building materials with chargeable molecular Legos", *SoCal Organometallics Meeting*, University of Southern California, Los Angeles, CA, USA; February 10, 2019

Mentorship Experience (since 2019)

Postdoctoral Researchers

1) Dr. Nils Rotthowe (Ph.D. 2021, M.Sc. 2016, University of Konstanz, Germany. Advisor: Prof. Rainer Winter; B.Sc. 2013, University of Konstanz, Germany.)

Current Graduate Students

4) Tom Burton (M.Chem. 2019, Durham University, UK)
3) Clarissa Olivar (B.A. 2018, University of California, Santa Barbara) – Norma and Jerol Sonosky Environmental Sustainability Graduate Summer Fellowship 2020
2) Luana Zagami (B.S. 2016, University of Eastern Piedmont Amedeo Avogadro, Italy)
1) Christina Trang (B.S. 2018, University of Oregon)

Current Undergraduate and Master Students, Volunteers

6) Jeremy Nunez (B.S. class of 2022, Cerritos College) – Cerritos Research Intern, 2021
5) Sawyer Lazar (B.S. class of 2023, USC Dornsife) – Beckman Scholar 2021
4) Tejpal Randhawa (B.S. class of 2022, USC Dornsife) – Provost's Research Fellowship for Spring 2021
3) Daniel Cardenas (B.S. class of 2021, USC Dornsife)
2) Zelin Miao (B.S. Central South University, China; M.S. 2020, USC Viterbi)
1) Sully Chen (B.S. class of 2021, USC Dornsife) – Provost's Research Fellowship for Fall 2019, Spring 2021

Former Graduate Students

1) Joseph Parr (M.Chem. 2018, University of Leeds, UK; M.S. 2020, USC) – Norma and Jerol Sonosky Environmental Sustainability Graduate Summer Fellowship 2019. **Current position:** graduate student, Imperial College London, UK.