

Russell E. Hopson

NMR Facility Supervisor
Department of Chemistry
Brown University
Providence, RI 02912

Education:

B.Sc. (Chemistry) George Mason University 1994
Ph.D. (Organic Chemistry) Northeastern University 2000

Research Experience:

NMR Facility Supervisor, Brown University Chemistry Department, Providence, RI, 2003-present. Responsible for all NMR facility operations including maintenance, cryogen fills, upgrades, training, and facilities website. Collaborate with faculty/students on NMR experiment design, implementation, and interpretation for the characterization of natural products, reactive intermediates, and organometallic complexes. Extensive experience in diffusion oriented NMR spectroscopy (DOSY).

Research Scientist, Clariant Corporation, Coventry, RI, 2001-2003. Developed a synthetic process for the production of quinacridone pigments for automotive coatings.

Research Assistant, Gillette Company, Boston, MA, 1994-2000. Performed synthesis, characterization, and evaluation of novel dyes and ball pen ink solvents for use in eradicable roller ball, fountain, and ball pen ink pen applications. Studied the effects of surface area on lithium iodide battery performance for use in pacemakers and implantable medical devices. Studied the effects of hydrophobic coatings in cathode pores on reducing the evaporation rate of electrolyte for Zn/air batteries to improve performance.

Research Assistant, Northeastern University, Boston, MA, 1994-2000. Thesis advisor: Professor David Forsyth. Dissertation: Synthesis and characterization of a selectively modified triple helix stabilizing ligand for use as an antigene agent.

Teaching Experience:

New User NMR Training	2003-present
Advanced NMR Training	2005-present
NMR Lecture for CHEM36	2007-present
NMR Lecture/Lab for CHEM106	2006
Adjunct Lecturer - General Chemistry Lab	Fall 2008
Adjunct Lecturer - CHEM1560	Spring 2011
Adjunct Lecturer - CHEM1560	Spring 2012
Adjunct Lecturer - CHEM1560	Spring 2014

Military Experience:

Fire Direction Specialist, U.S. ARMY, Augsburg, Germany. 1985-1987.

Affiliations:

American Chemical Society, 1994-present
Association of Managers in Magnetic Resonance Laboratories (AMMRL), 2004-present.

Professional Development:

Bruker Biospin NMR System Administrator Training	2004
Bruker Biospin NMR Avance I	2004
Bruker Biospin NMR Diffusion Ordered Spectroscopy	2004
Roger Williams University – Linux Fundamentals	2005

Brown University – Dreamweaver Site Development	2005
Bruker Biospin NMR Avance II (Xwinmr)	2006
Bruker Biospin NMR Avance II (Topspin)	2008
Bruker Biospin NMR Biomolecules	2008
Bruker Biospin NMR Pulse Programming	2009
Bruker Biospin Service and Maintenance	2010

Publications:

1. Yichun Wang, Russell Hopson. The Gillette Company. “Eradicable Inks”. United States Patent 5916357 (1999).
2. Yichun Wang, Russell Hopson. The Gillette Company. “Solvent Based Pen Inks”. United States Patent 6,149,721 (2000).
3. Lin, X., Hopson, R., Cane, D. E. “Genome Mining in *Streptomyces coelicolor*: Molecular Cloning and Characterization of a New Sesquiterpene Synthase”. *J. Am. Chem. Soc.*, **2006**; *128* (18): 6022-6023.
4. Ma, L., Hopson, R., Li, D., Zhang, Y., Williard, P.G. “Synthesis and Structural Characterization of the Bis(diisopropylamino)boron Enolate of tert-Butyl Methyl Ketone”. *Organometallics*, **2007**; *26* (24): 5834-5839.
5. Russell E. Hopson and Wolfgang Peti, “Micro-coil NMR spectroscopy – a novel tool for biological high-throughput NMR spectroscopy” in “High-Throughput Methods Series: Methods in Molecular Biology”. Vol. 426, Kobe, Bostjan; Guss, Mitchell; Huber, Thomas (Eds.) **2008**, Approx. 400 p. 130 illus., 10 in color., Hardcover ISBN: 978-1-58829-809-6.

6. Brard, L., Singh, R.K., Lange, T.S., Kim, K.K., Singh, A.P., Hopson, R., Vorsa, N. "Synthesis of Bicyclic Aryl Thiazolines with Selective Anti- Proliferative Effects on Human Cancer Cell Lines". *Letters in Organic Chemistry*, **2008**; 5 (2): 103-109.
7. Li, D., Sun, C., Liu, J., Hopson, R., Li, W., Williard, P.G. "Aggregation Studies of Complexes Containing a Chiral Lithium Amide and n-Butyllithium". *J. Org. Chem.*, **2008**; 73 (6): 2373 - 2381.
8. Li, D., Hopson, R., Li, W., Liu, J., Williard, P.G. "¹³C INEPT Diffusion-Ordered NMR Spectroscopy (DOSY) with Internal References". *Org. Lett.*, **2008**; 10 (5): 909 – 911.
9. Li, D., Keresztes, I., Hopson, R., and Williard, P.G. "Characterization of Reactive Intermediates by Multinuclear Diffusion-Ordered NMR Spectroscopy (DOSY)". *Acc. Chem. Res.*, **2009**; 42 (2): 270–280.
10. Li, D., Kagan, G., Hopson, R., Williard, P.G. "Formula Weight Prediction by Internal Reference Diffusion-Ordered NMR Spectroscopy (DOSY)". *J. Am. Chem. Soc.*, **2009**; 131 (15): 5627–5634.
11. Wang, C., Hopson, R., Lin, X., and Cane, D. "Biosynthesis of the Sesquiterpene Botrydial in *Botrytis cinerea*. Mechanism and Stereochemistry of the Enzymatic Formation of Presilphiperfolan-8 β -ol". *J. Am. Chem. Soc.*, **2009**; 131 (24): 8360–8361.
12. Kagan, G., Li, W., Hopson, R., and Williard, P.G. "Internally Referenced Diffusion Coefficient–Formula Weight (D-FW) Analysis of ³¹P Diffusion-Ordered NMR Spectroscopy (DOSY)". *Org. Lett.*, **2009**; 11 (21): 4818-4821.

13. Kagan, G., Li, W., Hopson, R., and Williard, P.G. “⁶Li Diffusion-Ordered NMR Spectroscopy (DOSY) and Applications to Organometallic Complexes”. *Org. Lett.*, **2010**; *12* (3): 520-523.
14. Socha, A., Kagan, G., Li, W., Hopson, R., Sello, J., Williard, P.G. “Diffusion Coefficient-Formula Weight Correlation Analysis via Diffusion Ordered Nuclear Magnetic Resonance Spectroscopy (DOSY NMR) To Examine Acylglycerol Mixtures and Biodiesel Production”. *Energy and Fuels*, **2010**; *24* (8): 4518-4521.
15. Li, W., Kagan, G., Yang, H., Cai, C., Hopson, R., Wei, D., Sweiggart, D.A., Williard, P.G. “Accurate Formula Weight Determination in Physically Separated Systems by Diffusion Coefficient–Formula Weight Correlation”. *Organometallics*, **2010**; *29* (6): 1309-1311.
16. Li, W., Kagan, G., Yang, H., Cai, C., Hopson, R., Sweiggart, D.A., Williard, P.G. “Physically Separated References for Diffusion Coefficient-Formula Weight (D-FW) Analysis of Diffusion-Ordered NMR Spectroscopy (DOSY) in Water”. *Organic Letters*, **2010**; *12* (12): 2698-2701.
17. Ma, Z., Hopson, R., Cai, C., Han, S., Moulton, B. “Modifying Lipophilicities of Zn(II) Coordination Species by Introduction of Ancillary Ligands: A Supramolecular Chemistry Approach”. *Crystal Growth & Design*, **2010**; *10* (5): 2376-2381.
18. Kagan, G., Li, W., Sun, C., Hopson, R., Williard, P.G. “Synthesis, Characterization, and Reaction of a Ketone-Derived 1,4-Dienolate Compound”. *J. Org. Chem.*, **2010**; *76* (1): 65-70.

19. Kagan, G., Li, W., Li, D., Hopson, R., Williard, P.G. “Characterization of Dimeric Chiral Lithium Amide Structures Derived from N-isopropyl-O- triisopropylsilyl Valinol”. *J. Am. Chem. Soc.*, **2011**; *133* (17): 596-6602.
20. Li, W., Kagan, G., Hopson, R., Williard, P.G. “Measurement of Solution Viscosity via Diffusion-Ordered NMR Spectroscopy (DOSY)”. *J. Chem. Educ.*, **2011**; *88* (9): 1331-1335.
21. Ma, Z., Han, S., Hopson, R., Wei, Y, and Moulton, B., “Two-Step Postsynthetic Modifications of a Dinuclear Zn(II) Coordination Compound: NMR characterizations, Crystal Structures and Hirshfeld Surface Analyses”. *Inorganica Chim Acta.*, **2012**; *388*, 135-139.
22. Laulicht, B., Mancini, A., Geman, N., Cho, D., Estrellas, K., Furtado, S., Hopson, R., Tripathi, A., and Mathiowitz, E., “Bioinspired Bioadhesive Polymers: Dopa-Modified Poly(acrylic acid) Derivatives”. *Macromol. Biosci.*, **2012**; *12* (11): 1555–1565.
23. Su, C., Hopson, R., Williard, P.G. “Crystal Structure and Solution State Characterization of Lithium (S)-(1-(bis(2-methoxyethyl)amino)-3-methylbutan-2-yl)(methyl)amide”. *J. Org. Chem.* **2013**; *78* (14): 7288-92.
24. Su, C., Hopson, R., Williard, P.G. “Characterization of Cyclopentyllithium and Cyclopentyllithium Tetrahydrofuran Complex”. *J. Am. Chem. Soc.*, **2013**; *135* (33): 12400-12406.
25. Su, C., Hopson, R., Williard, P.G. “Mixed Aggregates of an Alkyl Lithium Reagent and a Chiral Lithium Amide Derived from N-Ethyl-O-Triisopropylsilyl Valinol”. *J. Am. Chem. Soc.*, **2013**; *135* (38): 14367-14379.

26. Su, C., Hopson, R., Williard, P. G. "Characterization of Hexameric and Octameric secButyllithium/sec-Butoxide Mixed Aggregates". *Eur. J. Inorg. Chem.* **2013**; 2013 (24): 4136- 4141.
27. Yana, W., Bowena, W., Hopson, R., Mathew, A., Jacob, J. "Biological Studies of Turmeric Oil, Part 2: Isolation and Characterization of Turmeric Oil Components; Cytotoxic Activity Against Pancreatic Cancer Cells". *Natural Products Communications*, **2013**; 8 (6): 811-814.
28. Su, C., Hopson, R., Williard, P.G. "Isotopically Enriched ^{13}C Diffusion-Ordered NMR Spectroscopy: Analysis of Methyllithium". *J. Org. Chem.* **2013**; 78 (23): 11733-11746.
29. Kawar, N., Maclaughlan, S., Horan, T. C., Uzun, A., Lange, T. S., Kim, K. K., Singh, R. K. "PT19c, Another Nonhypercalcemic Vitamin D₂ Derivative, Demonstrates Antitumor Efficacy in Epithelial Ovarian and Endometrial Cancer Models". *Genes & Cancer*, **2013**; 4 (11-12): 524–534.
30. Su, C., Guang, J., Li, W., Wu, K., Hopson, R., Williard, P. G. "Chiral Lithium Diamides Derived from Linked N-Isopropyl Valinol or Alaninol". *J. Am. Chem. Soc.*, **2014**; 136 (33): 11735-11747.
31. Su, C., Hopson, R., Williard, P.G. "Influence of Steric Factors on Chiral Lithium Amide Aggregates". *J. Am. Chem. Soc.*, **2014**; 136 (8): 3246-3255.
32. Guang, J., Hopson, R., Williard, P.G. "Diffusion Coefficient-Formula Weight (D-FW) Analysis of ^2H Diffusion-Ordered NMR Spectroscopy (DOSY)". *J. Org. Chem.*, **2015**; 80 (18): 9102-7.

33. Guang, J., Liu, Q. P., Hopson, R., Williard, P. G. "Lithium Pinacolone Enolate Solvated by Hexamethylphosphoramide". *J. Am. Chem. Soc.*, **2015**; *137* (23): 7347-7356.
34. Guang, J., Liu, Q., Hopson, R., Kagan, G., Li, W., Monroe, T. B., Williard, P. G. "Conformational Polymorphism of Lithium Pinacolone Enolate". *J. Am. Chem. Soc.*, **2016**; *138* (46): 15177-15188.
35. Mao, Y., Song, M., Hopson, R., Karan, N. K., Guduru, P. R., Wang, L.-Q. "Hyperpolarized ^{129}Xe Nuclear Magnetic Resonance Studies of Si Nanocomposite Electrode Materials". *Energy & Fuels* **2016**; *30* (2): 1470-1476.
36. Mao, Y., Karan, N. K., Song, M., Hopson, R., Guduru, P. R., Wang, L.-Q. "Investigation of Solid Electrolyte Interphase Formed on Si Nanoparticle Composite Electrodes Using Hyperpolarized ^{129}Xe Nuclear Magnetic Resonance Spectroscopy". *Energy & Fuels* **2017**; *31* (5): 5622-5628.
37. Tai, O., Hopson, R., Williard, P. G. "Ligand Binding Constants to Lithium Hexamethyldisilazide Determined by Diffusion-Ordered NMR Spectroscopy". *The Journal of Organic Chemistry*, **2017**; *82* (12): 6223-6231.
38. Tai, O., Hopson, R., Williard, P. G. "Aggregation and Solvation of n-Butyllithium". *Org. Lett.*, **2017**; *19* (15): 3966-3969.
39. Yennie, C. J., Hopson, R., Hess, K. M. "Quantifying the Product Distribution of a Chemical Reaction by ^1H NMR Spectroscopy: A Cooperative Learning Approach for the Undergraduate Organic Chemistry Laboratory". *J. Chem. Ed.*, **2017**; *94* (9): 1383-1387.

40. Hopson, R., Lee, P. Y. B., Hess, K. M. "1-Dimensional Selective Nuclear Overhauser Effect NMR Spectroscopy to Characterize Products from a Two-Step Green Chemistry Synthesis". *Journal of Chemical Education*, **2018**; Articles ASAP.

Conference Posters and Symposiums

1. "Spin-Trapping Studies of Radical Intermediates in Azoester Hydrolysis: In Search of New DNA-Cleaving Compounds," Veeraraghavan Srinivasan, Russell Hopson, Stephen V. Kolaczowski, and David Budil. 22nd International EPR Symposium at the 41st Rocky Mountain Conference on Analytical Chemistry, Denver, CO, August, 1999.
2. "Multinuclear Diffusion-Ordered NMR Spectroscopy Studies of Organometallic Systems," Deyu Li, Jia Liu, Russell Hopson, Paul G. Williard. 47th ENC Conference, Poster 264, April 22-27, 2006.
3. "Asymmetric Aryl Transfer Reactions to 3,4-Dihydroisoquinoline N-Oxide: Scope and Mechanistic Studies", Sa Wang, Burak Onaran, Russell Hopson, Deyu Li, Chris Seto. 233rd ACS National Meeting, Chicago, IL, March 2007.
4. "Design of mixed-ligand Zinc-(metal chelator) coordination species toward the treatment of neurodegenerative diseases and in vitro studies by single crystal X-ray diffraction, DOSY NMR and UV-vis spectroscopy," Zhenbo Ma, Shuangbing Han, Russell Hopson, and Brian Moulton, Chemistry Department, Brown University, 324 Brook Street, Providence, RI 02912.

235th ACS National Meeting, New Orleans, LA. April 6-10,
2008.