Thad Alan Harroun
tharroun@brocku.ca
905.688.5550 x5905

Brock University
Department of Physics
1812 Sir Issac Brock Blvd.
St. Catharines, Ontario, L2S 3A1, Canada
Niagara Region

Web : Orcid : Publons : Google

Current

January 2006-Present — Professor and Chair, Department of Physics, Brock University

Teaching

Courses taught at Brock:

PHYS 1P23/1P93 Fluids, Heat and Light
PHYS 2P02 Medical Physics
PHYS 2P50 Modern Physics
PHYS 3P02 Cellular Biophysics
PHYS 3P70 Quantum Mechanics
PHYS 4P61 Nuclear Physics
PHYS 4V82/PHYS 5P02 Membrane Biophysics
PHYS 4P10/5P10 Computational Physics
PHYS 5P41 Advanced Statistical Physics

Honors

February 2017 — 2016-2017 Dean's Distinguished Scholar Award for the Faculty of Mathematics and Science, Brock University

June 2016 — 2015-2016 Faculty Award for Excellence in Teaching for the Faculty of Mathematics and Science, Brock University

January 2016 — Faculty of Mathematics and Science, Distinguished Teaching Award, Brock University

April 2015 — Faculty of Graduate Studies, Graduate Mentorship Award, Brock University

May 2000 — H.A. Wilson Award for most outstanding Ph.D. thesis in Physics, Rice University

May 2000 — Outstanding Dissertation Award, Rice University - Texas Medical Center Chapter of Sigma Xi

November 1998 — Dunn Foundation Prize, W. M. Keck Center for Computational Biology

May 1998 Rice University Vice Presidential Appreciation Award

Education

June 2000 PhD, Applied Physics, Rice University, Houston, Texas
June 1997 MS, Applied Physics, Rice University
June 1993 BA, Physics, University of California, Berkeley

Professional

2005 Research Associate, Department of Physics, University of Guelph
Part of the AFMnet, a Canadian Centre of Excellence.

2002-2005 NSERC Visiting Fellow - Canadian Neutron Beam Centre,
NRC Canada, John Katsaras, supervisor

1999-2002 BBSRC Post-Doctoral Research Fellow,
University of Edinburgh, Jeremy P. Bradshaw, supervisor

1999-2000 W. M. Keck pre-doctoral fellowship in computational biology,
Rice University, Huey W. Huang, supervisor

1996-1999 NIH / Houston Area Molecular Biophysics Program,
Rice University, Huey W. Huang, supervisor

Publications

Peer reviewed articles

[1] Drew Marquardt, Brad van Oosten, Maksymilian Dziura, Joanna R. Long, and Thad A. Harroun. "The interaction and orientation of Peptide KL4 in model membranes". In: *Biochimica et Biophysica Acta (BBA) - Biomembranes* (2022), p. 183893. DOI: 10.1016/j.bbamem.2022.183893.

[2] Jesse Vanloon, Thad Harroun, and Hongbin Yan. "Circular dichroism spectroscopy of DNA duplexes at near-biological concentrations". In: *Bioorganic & Medicinal Chemistry Letters* 43 (2021), p. 128053. DOI: 10.1016/j.bmcl.2021.128053.

[3] Drew Marquardt, Frederick A. Heberle, Jianjun Pan, Xiaolin Cheng, Georg Pabst, Thad A. Harroun, Norbert Kucerka, and John Katsaras. "The structures of polyunsaturated lipid bilayers by joint refinement of neutron and X-ray scattering data". In: *Chemistry and Physics of Lipids* (Feb. 2020), p. 104892. DOI: 10.1016/j.chemphyslip.2020.104892.

[4] Daniel Banks and Thad A. Harroun. "Seventy years of scientific impact using neutron beams at the Chalk River Laboratories". In: *FACETS* 4 (Oct. 2019), pp. 507–530. DOI: 10.1139/facets-2019-0003.

Updated October 28, 2022

[5] Mikel Ghelfi, Lucas A. Maddalena, Jeffrey A. Stuart, Jeffrey Atkinson, Thad A. Harroun, and Drew Marquardt. "Vitamin E-inspired Multi-scale imaging agent". In: *Bioorganic and Medicinal Chemistry Letters* 29.1 (Jan. 2019), pp. 107–114. DOI: 10.1016/j.bmcl.2018.10.052.

[6] Michelle Przedborski, Surajit Sen, and Thad A. Harroun. "Fluctuations in Hertz chains at equilibrium". In: *Physical Review E* 95.032903 (2017). DOI: 10.1103/physreve.95.032903.

[7] Michelle Przedborski, Surajit Sen, and Thad A. Harroun. "Long-term behavior of Hertzian chains between fixed walls is really equilibrium". In: *International Journal of Modern Physics B: Condensed Matter Physics, Statistical Physics, Applied Physics* 31.10 (Apr. 2017), p. 1742011. DOI: 10.1142/S0217979217420115.

[8] Michelle Przedborski, Surajit Sen, and Thad A. Harroun. "The equilibrium phase in heterogeneous Hertzian chains". In: *Journal of Statistical Mechanics: Theory and Experiment* 2017.12 (2017), pp. 1–21. DOI: 10.1088/1742-5468/aa9a62.

[9] B. Van Oosten, D. Marquardt, and T. A. Harroun. "Testing High Concentrations of Membrane Active Antibiotic Chlorhexidine Via Computational Titration and Calorimetry". In: *Journal of Physical Chemistry B* 121.18 (2017), pp. 4657–4668. DOI: 10.1021/acs.jpcb.6b12510.

[10] Drew Marquardt, Frederick A. Heberle, Denise Greathouse, Roger E. Koeppe II, Robert F. Standaert, et al. "Lipid Bilayer Thickness Determines Cholesterol's Location in Model Membranes". In: *Soft Matter* 12.47 (2016), pp. 9417–9428. DOI: 10.1039/C6SM01777K.

[11] Drew Marquardt, Brad J. Van Oosten, Mikel Ghelfi, Jeffrey Atkinson, and Thad A. Harroun. "Vitamin E Circular Dichroism Studies: Insights to conformational changes induced by the solvent's polarity." In: *Membranes* 6.4 (2016), p. 56. DOI: 10.3390/membranes6040056.

[12] Brad van Oosten and Thad A. Harroun. "A MARTINI extension for Pseudomonas Aeruginosa PAO1 lipopolysaccharide". In: *Journal of Molecular Graphics and Modelling* 63 (2016), pp. 125–133. DOI: 10.1016/j.jmgm.2015.12.002.

[13] Richard J. Alsop, Laura Toppozini, Drew Marquardt, Norbert Kučerka, Thad A. Harroun, and Maikel C. Rheinstädter. "Aspirin inhibits formation of cholesterol rafts in fluid lipid membranes". In: *Biochimica et Biophysica Acta* 1848.3 (Mar. 2015), pp. 805–812. DOI: 10.1016/j.bbamem.2014.11.023.

[14] Mark Frampton, Drew Marquardt, Timothy Jones, Thad Harroun, and Paul Zelisko. "Macrocyclic Oligoesters Incorporating a Cyclotetrasiloxane Ring". In: *Biomacromolecules* 16.7 (June 2015), pp. 2091–2100. DOI: 10.1021/acs.biomac.5b00518.

[15] Norbert Kučerka, Brad Van Oosten, Jianjun Pan, Frederick Heberle, Thad Harroun, and John Katsaras. "Molecular Structures of Fluid Phosphatidylethanolamine Bilayers Obtained from Simulation-to-Experiment Comparisons and Experimental Scattering Density Profiles". In: *The Journal of Physical Chemistry B* 119.5 (Feb. 2015). Journal cover article., pp. 1947–1956. DOI: 10.1021/jp511159q.

Updated October 28, 2022

[16] Xiaoling Leng, Jacob J. Kinnun, Drew Marquardt, Mikel Ghefli, Norbert Kučerka, John Katsaras, Jeffrey Atkinson, Thad A. Harroun, Scott E. Feller, and Stephen R. Wassall. "α-Tocopherol Is Well Designed to Protect Polyunsaturated Phospholipids: {MD} Simulations". In: *Biophysical Journal* 109.8 (2015), pp. 1608–1618. DOI: 10.1016/j.bpj.2015.08.032. URL: http://www.sciencedirect.com/science/article/pii/S000634951500867X.

[17] Drew Marquardt, Richard J. Alsop, Maikel C. Rheinstädter, and Thad A. Harroun. "Neutron Scattering at the Intersection of Heart Health Science and Biophysics". In: *Journal of Cardiovascular Development and Disease* 2.2 (2015), pp. 125–140. ISSN: 2308-3425. DOI: 10.3390/jcdd2020125. URL: http://www.mdpi.com/2308-3425/2/2/125.

[18] Drew Marquardt, Norbert Kucerka, John Katsaras, and Thad A. Harroun. "α-Tocopherol's Location in Membranes Is Not Affected by Their Composition". In: *Langmuir* 31.15 (2015), pp. 4464–4472. DOI: 10.1021/la502605c.

[19] Michelle Przedborski, Thad A. Harroun, and Surajit Sen. "Granular chains with soft boundaries: Slowing the transition to quasiequilibrium". In: *Physical Review E* 91.042207 (Apr. 2015), p. 1. DOI: http://dx.doi.org/10.1103/PhysRevE.91.042207.

[20] Michelle A. Przedborski, Thad A. Harroun, and Surajit Sen. "Localizing energy in granular materials". In: *Applied Physics Letters* 107, 244105 (2015). DOI: 10.1063/1.4937903.

[21] Drew Marquardt, Justin A. Williams, Jacob J. Kinnun, Norbert Kucerka, Jeffrey Atkinson, Stephen R. Wassall, John Katsaras, and Thad A. Harroun. "Dimyristoyl Phosphatidylcholine: A Remarkable Exception to alpha-Tocopherol's Membrane Presence". In: *Journal of the American Chemical Society* 136.1 (2014), pp. 203–210. DOI: 10.1021/ja408288f.

[22] Brad Van Oosten, Drew Marquardt, Ivana Komljenović, Jeremy P. Bradshaw, Edward Sternin, and Thad A. Harroun. "Small molecule interaction with lipid bilayers: A molecular dynamics study of chlorhexidine". In: *Journal of Molecular Graphics and Modelling* 48 (2014), pp. 96–104. DOI: 10.1016/j.jmgm.2013.12.007.

[23] Clare L. Armstrong, Drew Marquardt, Hannah Dies, Norbert Kučerka, Zahra Yamani, Thad A. Harroun, John Katsaras, An-Chang Shi, and Maikel C. Rheinstädter. "The Observation of Highly Ordered Domains in Membranes with Cholesterol". In: *PLOS One* 8, e66162 (2013). DOI: 10.1371/journal.pone.0066162.

[24] Drew Marquardt, Justin A. Williams, Norbert Kučerka, Jeffrey Atkinson, Stephen R. Wassall, John Katsaras, and Thad A. Harroun. "Tocopherol Activity Correlates with Its Location in a Membrane: A New Perspective on the Antioxidant". In: *Journal of the American Chemical Society* 135 (2013), pp. 7523–7533. DOI: 10.1021/ja312665r.

[25] Mark B. Frampton, Jacqueline P. Séguin, Drew Marquardt, Thad A. Harroun, and Paul M. Zelisko. "Synthesis of polyesters containing disiloxane subunits: Structural characterization, kinetics, and an examination of the thermal tolerance of Novozym-435". In: *Journal of Molecular Catalysis B: Enzymatic* 85-86 (2012), pp. 149–155. DOI: 10.1016/j.molcatb.2012.09.010.

[26] Mu-Ping Nieh, V. A. Raghunathan, Georg Pabst, Thad A. Harroun, Kazuomi Nagashima, Hannah Morales, John Katsaras, and Peter Macdonald. "Temperature Driven Annealing of Perforations in Bicellar Model Membranes". In: *Langmuir* 27 (2011), pp. 4838–4847. DOI: 10.1021/la104750x.

[27] Ivana Komljenović, Drew Marquardt, Thad A. Harroun, and Edward Sternin. "Location of Chlorhexidine in DMPC Model Membranes: A Neutron Diffraction Study". In: *Chemistry and Physics of Lipids* (2010). DOI: 10.1016/j.chemphyslip.2010.03.007.

[28] Norbert Kucerka, Drew Marquardt, Thad A. Harroun, Mu-Ping Nieh, Stephen R. Wassall, Djurre H. de Jong, Lars V. Schaefer, Siewert J. Marrink, and John Katsaras. "Cholesterol in Bilayers with PUFA Chains: Doping with DMPC or POPC Results in Sterol Reorientation and Membrane-Domain Formation". In: *Biochemistry* 49.35 (2010), pp. 7485–7493. DOI: 10.1021/bi100891z.

[29] Norbert Kučerka, Drew Marquardt, Thad Harroun, Mu-Ping Nieh, Stephen Wassall, and John Katsaras. "The Functional Significance of Lipid Diversity: Orientation of Cholesterol in Bilayers is Determined by Lipid Species." In: *Journal of the American Chemical Society* 131.45 (2009), pp. 16358–16359. DOI: 10.1021/ja907659u.

[30] Thad Harroun, John Katsaras, and Stephen Wassall. "Cholesterol is found to reside in the center of a polyunsaturated lipid membrane". In: *Biochemistry* 47 (2008), pp. 7090–7096. DOI: 10.1021/bi800123b.

[31] Norbert Kučerka, Erzsebet Papp-Szabo, Mu-Ping Nieh, Thad Harroun, Sarah Schooling, Jeremy Pencer, Eric Nicholson, Terry Beveridge, and John Katsaras. "Effect of cations on the structure of bilayers formed by lipopolysaccharides isolated from *P. Aeruginosa* PAO1". In: *The Journal of Physical Chemistry B* 112 (2008), pp. 8057–8062. DOI: 10.1021/jp8027963.

[32] Siewert J. Marrink, Alex H. de Vries, Thad. A. Harroun, John Katsaras, and Stephen R. Wassall. "Cholesterol Shows Preference for the Interior of Polyunsaturated Lipid Membranes". In: *Journal of the American Chemical Society* 103.1 (2008), pp. 10–11. DOI: 10.1021/ja076641c.

[33] Oleh M. Tanchak, Kevin G. Yager, Helmut Fritzsche, Thad Harroun, John Katsaras, and Christopher J. Barrett. "Ion distribution in multilayers of weak polyelectrolytes: A neutron reflectometry study". In: *The Journal of Chemical Physics* 129, 084901 (2008), pp. 1–10. DOI: 10.1063/1.2943201.

[34] Wei Feng, Mu-Ping Nieh, Shiping Zhu, Thad A. Harroun, John Katsaras, and John L. Brash. "Characterization of protein resistant, grafted methacrylate polymer layers bearing oligo(ethylene glycol) and phosphorylcholine side chains by neutron reflectometry". In: *Biointerphases* 2 (1 Mar. 2007), pp. 34–43. DOI: 10.1116/1.2711705.

[35] Richard H. Ashley, Thad A. Harroun, Thomas Hauss, Kieran C. Breen, and Jeremy P. Bradshaw. "Autoinsertion of soluble oligomers of Alzheimer's Abeta(1-42) peptide into cholesterol-containing membranes is accompanied by relocation of the sterol towards the bilayer surface". In: *BMC Structural Biology* 6.21 (2006), pp. 1–11. DOI: 10.1186/1472-6807-6-21.

[36] T. A. Harroun, C. M. Desrochers, M.-P. Nieh, M. J. Watson, and J. Katsaras. "0.9 T static magnetic field and temperature-controlled specimen environment for use with general-purpose optical microscopes". In: *Review of Scientific Instruments* 77, 014102 (2006), pp. 1–4. DOI: 10.1063/1.2162433.

[37] Thad A. Harroun, John Katsaras, and Stephen R. Wassall. "Cholesterol Hydrozyl Group Is Found To Reside in the Center of a Polyunsaturated Lipid Membrane". In: *Biochemistry* 45 (2006), pp. 1227–1233. DOI: 10.1021/bi0520840.

[38] Oleh M. Tanchak, Kevin G. Yager, Helmut Fritzsche, Thad Harroun, John Katsaras, and Christopher J. Barrett. "Water Distribution in Multilayers of Weak Polyelectrolytes". In: *Langmuir* 22.11 (2006), pp. 5137–5143. DOI: 10.1021/la0529613.

[39] K. Balali-Mood, T. A. Harroun, and J. P. Bradshaw. "Membrane-bound ARF1 peptide: Interpretation of neutron diffraction data by molecular dynamics simulation methods". In: *Molecular Membrane Biology* 22.5 (2005), pp. 379–388. DOI: 10.1080/09687860500220148.

[40] Thad A. Harroun, Kia Balali-Mood, Thomas Hauss, Toshiya Otomo, and Jeremy P. Bradshaw. "Neutron Diffraction with an Excess-Water Cell". In: *Journal of Biological Physics* 31 (2005), pp. 207–218. DOI: 10.1007/s10867-005-2097-0.

[41] Thad A. Harroun, Jeremy P. Bradshaw, Kia Balali-Mood, and John Katsaras. "A structural study of the myristoylated N-terminus of ARF1". In: *Biochimica et Biophysica Acta* 1668.1 (2005), pp. 138–144. DOI: 10.1016/j.bbamem.2004.12.003.

[42] Thad A. Harroun, Helmut Fritzsche, Mu-Ping Nieh, Kevin Yager, Oleh Tanchak, Christopher Barrett, and John Katsaras. "Variable temperature, relative humidity (0 - 100% RH), and liquid neutron reflectometry sample cell suitable for polymeric and biomimetic materials". In: *Review of Scientific Instruments* 76.6, 065101 (2005), pp. 1–5. DOI: 10.1063/1.1921550.

[43] Thad A. Harroun, Martin Koslowsky, Mu-Ping Nieh, Charles-François de Lannoy, V. A. Raghunathan, and John Katsaras. "A comprehensive examination of mesophases formed by DMPC and DHPC mixtures". In: *Langmuir* 21.12 (2005), pp. 5356 –5361. DOI: 10.1021/la050018t.

[44] Mu-Ping Nieh, Velayudhan A. Raghunathan, Steve R. Kline, Thad A. Harroun, Chien-Yueh Huang, Jeremy Pencer, and John Katsaras. "Spontaneously formed unilamellar vesicles with path-dependent size distribution". In: *Langmuir* 21.15 (2005), pp. 6656–6661. DOI: 10.1021/la0508994.

[45] J. Pencer, M.-P. Nieh, T. A. Harroun, S. Krueger, C. Adams, and J. Katsaras. "Bilayer thickness and thermal response of dimyristoylphosphatidylcholine unilamellar vesicles containing cholesterol, ergosterol and lanosterol: A small-angle neutron scattering study". In: *Biochimica et Biophysica Acta* 1720.1-2 (Dec. 2005), pp. 84–91. DOI: 10.1016/j.bbamem.2005.10.017.

[46] T. A. Harroun, M. Koslowsky, M.-P. Nieh, V. A. Raghunathan, and J. Katsaras. "Finite size effects do not reduce the repeat spacing of phospholipid multibilayer stacks on a rigid substrate". In: *European Physical Journal E* 13.1 (2004), pp. 359–362. DOI: 10.1140/epje/i2004-10003-7.

[47] T. A. Harroun, M.-P. Nieh, M. J. Watson, V. A. Raghunathan, G. Pabst, M. R. Morrow, and J. Katsaras. "The Relationship Between the Unbinding and Main Transition Temperatures of Phospholipid Bilayers Under Pressure". In: *Physical Review E* 69.3, 031906 (2004), pp. 1–8. DOI: 10.1103/PhysRevE.69.031906.

[48] T. A. Harroun, V.A. Raghunathan, M.-P. Nieh, and J. Katsaras. "Finite-Size Effects in Biomimetic Smectic Films". In: *Physical Review E* 70.6, 062902 (2004), pp. 1–4. DOI: 10.1103/PhysRevE.70.062902.

[49] M.-P. Nieh, T. A. Harroun, V. A. Raghunathan, C. J. Glinka, and J. Katsaras. "Spontaneously Formed Monodisperse Biomimetic Unilamellar Vesicles: The Effect of Charge, Dilution and Time". In: *Biophysical Journal* 86.4 (Apr. 2004), pp. 2615–2629. DOI: 10.1016/S0006-3495(04)74316-7. URL: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1304108/.

[50] Mu-Ping Nieh, V. A. Raghunathan, Charles J. Glinka, Thad A. Harroun, Georg Pabst, and John Katsaras. "Magnetically Alignable Phase of Phospholipid "Bicelle" Mixtures Is a Chiral Nematic Made Up of Wormlike Micelles". In: *Langmuir* 20.19 (2004), pp. 7893–7897. DOI: 10.1021/la0486411.

[51] K. Balali-Mood, T. A. Harroun, and J. P. Bradshaw. "Molecular dynamics simulations of a mixed DOPC/DOPG bilayer". In: *Euorpean Physical Journal E* 12.1 (2003), pp. 135–140. DOI: 10.1140/epjed/e2003-01-031-3.

[52] Sarah M. A. Davies, Thad A. Harroun, Thomas Hauss, Sharon M. Kelly, and Jeremy P. Bradshaw. "The membrane bound N-terminal domain of human adenosine diphosphate ribosylation factor-1 (ARF1)". In: *FEBS Letters* 548.1-3 (2003), pp. 119–124. DOI: 10.1016/S0014-5793(03)00638-0.

[53] Thad A. Harroun, Ian Gourlay, Kia Balali-Mood, and Jeremy P. Bradshaw. "The fusion peptide of simian immunodeficiency virus and the phase behaviour of N-methylated dioleoylphosphatidylethanolamine". In: *Biochimica et Biophysica Acta* 1617.1-2 (2003), pp. 62–68. DOI: 10.1016/j.bbamem.2003.09.003.

[54] M.-P. Nieh, T. A. Harroun, V. A. Raghunathan, C. J. Glinka, and J. Katsaras. "Concentration-Independent Spontaneously Forming Biomimetric Vesicles". In: *Physical Review Letters* 91.10, 158105 (2003), pp. 1–4. DOI: 10.1103/PhysRevLett.91.158105.

[55] M. J. Watson, M.-P. Nieh, T. A. Harroun, and J. Katsaras. "Neutron sample cell suitable for the diffraction of aligned biomaterials and capable of exerting up to 370 MPa of hydrostatic pressure". In: *Review of Scientific Intruments* 74.5 (May 2003), pp. 2778–2781. DOI: 10.1063/1.1568555.

[56] Malcolm J. M. Darkes, Thad A. Harroun, Sarah M.A. Davies, and Jeremy P. Bradshaw. "The effect of fusion inhibitors on the phase behaviour of N-methylated dioleoylphosphatidylethanolamine". In: *Biochimica et Biophysica Acta* 1561.1 (2002), pp. 119–129. DOI: 10.1016/S0005-2736(01)00464-3.

[57] Thad A. Harroun, Jeremy P. Bradshaw, and Richard H. Ashley. "Inhibitors can arrest the membrane activity of human islet amyloid polypeptide independently of amyloid formation". In: *FEBS Letters* 507.2 (2001), pp. 200–204. DOI: 10.1016/S0014-5793(01)02972-6.

[58] Lin Yang, Thad A. Harroun, Thomas M. Weiss, Lai Ding, and Huey W. Huang. "Barrel-Stave Model or Toroidal Model? A Case Study on Melittin Pores". In: *Biophysical Journal* 81.3 (Sept. 2001), pp. 1475–1485. DOI: 10.1016/S0006-3495(01)75802-X. URL: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1301626/.

[59] Jeremy P. Bradshaw, Malcolm J. M. Darkes, Thad A. Harroun, John Katsaras, and Richard M. Epand. "Oblique Membrane Insertion of Viral Fusion Peptide Probed by Neutron Diffraction". In: *Biochemistry* 39.22 (June 2000), pp. 6581–6585. DOI: 10.1021/bi000224u.

[60] William T. Heller, Alan J. Waring, Robert I. Lehrer, Thad A. Harroun, Thomas M. Weiss, Lin Yang, and Huey W. Huang. "Membrane Thinning Effect of the β-Sheet Antimicrobial Protegrin". In: *Biochemistry* 39.1 (2000), pp. 139–145. DOI: 10.1021/bi991892m.

[61] Thad A. Harroun, William T. Heller, Thomas M. Weiss, Lin Yang, and Huey W. Huang. "Experimental Evidence for Hydrophobic Matching and Membrane-Mediated Interactions in Lipid Bilayers Containing Gramicidin". In: *Biophysical Journal* 76.2 (Feb. 1999), pp. 937–945. DOI: 10.1016/S0006-3495(99)77257-7. URL: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1300095/.

[62] Thad A. Harroun, William T. Heller, Thomas M. Weiss, Lin Yang, and Huey W. Huang. "Theoretical Analysis of Hydrophobic Matching and Membrane-Mediated Interactions in Lipid Bilayers Containing Gramicidin". In: *Biophysical Journal* 76.6 (June 1999), pp. 3176–3185. DOI: 10.1016/S0006-3495(99)77469-2. URL: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1300286/.

[63] Lin Yang, Thomas M. Weiss, Thad A. Harroun, William T. Heller, and Huey W. Huang. "Supramolecular Structures of Peptide Assemblies in Membranes by Neutron Off-Plane Scattering: Method of Analysis". In: *Biophysical Journal* 77.5 (Nov. 1999), pp. 2648–2656. DOI: 10.1016/S0006-3495(97)78064-0. URL: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1300539/.

[64] Lin Yang, Thad A. Harroun, William T. Heller, Thomas M. Weiss, and Huey W. Huang. "Neutron Off-Plane Scattering of Aligned Membranes. I. Method of Measurement". In: *Biophysical Journal* 75.2 (Aug. 1998), pp. 641–645. DOI: 10.1016/S0006-3495(98)77554-X. URL: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1299739/.

[65] W. T. Heller, K. He, S. J. Ludtke, T. A. Harroun, and H. W. Huang. "Effect of changing the size of lipid headgroup on peptide insertion into membranes". In: *Biophysical Journal* 73.1 (July 1997), pp. 239–244. DOI: 10.1016/S0006-3495(97)78064-0. URL: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1180925/.

[66] Steve J. Ludtke, Ke He, William T. Heller, Thad A. Harroun, Lin Yang, and Huey W. Huang. "Membrane Pores Induced by Magainin". In: *Biochemistry* 35.43 (Oct. 1996), pp. 13723–13728. DOI: 10.1021/bi9620621.

Review articles (peer reviewed)

[67] Drew Marquardt, Norbert Kučerka, Stephen R. Wassall, Thad A. Harroun, and John Katsaras. "Cholesterol's Location in Lipid Bilayers". In: *Chemistry and Physics of Lipids* 199 (2016), pp. 17 –25. DOI: 10.1016/j.chemphyslip.2016.04.001. URL: http://www.sciencedirect.com/science/article/pii/S0009308416300445.

[68] Thad A. Harroun, Norbert Kučerka, Mu-Ping Nieh, and John Katsaras. "Scattering for biophysics and biotechnology: Examples of self-assembled lipid systems". In: *Soft Matter* 5 (2009), pp. 2694–2703. DOI: 10.1039/b819799g.

[69] Norbert Kučerka, Mu-Ping Nieh, Jeremy Pencer, Thad Harroun, and John Katsaras. "The study of liposomes, lamellae and membranes using neutrons and X-rays". In: *Current Opinion in Colloid & Interface Science* 1 (2007), p. 1. DOI: 10.1016/j.cocis.2006.11.006.

[70] John Katsaras, Thad A. Harroun, Jeremy Pencer, and Mu-Ping Nieh. ""Bicellar" Lipid Mixtures as used in Biochemical and Biophysical Studies". In: *Naturwissenschaften* 92 (2005), pp. 355–366. DOI: 10.1007/s00114-005-0641-1.

Conference proceedings (peer reviewed)

[71] Jeffrey Atkinson, Thad Harroun, Stephen R. Wassall, William Stillwell, and John Katsaras. "The Location and Behavior of α-Tocopherol in Membranes". In: *Molecular Nutrition and Food Research* 54 (2010). Special Issue: Widened Horizon of Vitamin E Research, pp. 641–651. DOI: 10.1002/mnfr.200900439.

Updated October 28, 2022

[72] Thad A. Harroun, Drew Marquardt, John Katsaras, and Jeffrey Atkinson. "Neutron Diffraction and Vitamin E". In: *Journal of Physics: Conference Series*. 251, 012039 (2010). DOI: 10.1088/1742-6596/251/1/012039.

[73] Norbert Kučerka, Mu ping Nieh, Drew Marquardt, Thad A Harroun, S R Wassal, and John Katsaras. "Cholesterol in unusual places". In: *Journal of Physics: Conference Series* 251, 012038 (2010). DOI: 10.1088/1742-6596/251/1/012038.

[74] M.-P. Nieh, V. A. Raghunathan, C. J. Glinka, T. A. Harroun, and J. Katsaras. "Structural Phase Behavior of High-Concentration, Alignable Biomemetic Bicellar Mixtures". In: *Macromolecular Symposia* 219 (2005), pp. 135–145. DOI: 10.1002/masy.200550112.

Patents

[75] D. Marquardt, M. Ghelfi, J. Atkinson, and T. Harroun. *Vitamin e derivatives and their use as multi-scale imaging agents*. WIPO (PCT) WO2019210422A1. 2019.

Review articles (invited)

[76] J. Katsaras, M.-P. Nieh, T. A. Harroun, M. Chakrapani, and M. J. Watson. "Neutron and X-ray Scattering From Biologically Relevant Materials". In: *Physics in Canada* 60.2 (March/April 2004), pp. 93–100. URL: http://www.cap.ca/pic/archives/60.2(2004)/source.html.

Book chapters

[77] J. Atkinson, D. Marquardt, and T. Harroun. "The Behaviour of Vitamin E in Membranes". In: *Vitamin E: Chemistry and Nutritional Benefits*. Ed. by Etsuo Niki. Royal Society of Chemistry, 2019, pp. 32–50. ISBN: 978-1-78801-240-9. URL: https://pubs.rsc.org/en/content/ebook/978-1-78801-240-9.

[78] Mitchell DiPasquale, Michael H. L. Nguyen, Thad A. Harroun, and Drew Marquardt. "Monitoring oxygen sensitive membranes and Vitamin E as an antioxidant". In: *The Characterization of Biological and Biomimetic Membranes: Structure and Dynamics*. Ed. by M.-P. Nieh, F. A. Heberle, and J. Katsaras. Berlin/Boston: De Gruyter, 2019. Chap. 12, pp. 391–415. ISBN: 978-3-11-054465-7.

[79] Drew Marquardt and Thad A. Harroun. "Locations of Small Biomolecules in Model Membranes". In: *Liposomes, Lipid Bilayers and Model Membranes: From Basic Research to Technology*. Ed. by Mu-Ping Nieh Norbert Kučerka Georg Pabst and John Katsaras. Taylor and Francis, 2014. Chap. 11.

[80] Thad A. Harroun, George D. Wignall, and John Katsaras. "Neutron Scattering for Biology". In: *Neutron Scattering in Biology - Techniques and Applications*. Ed. by J. Fitter, T. Gutberlet, and J. Katsaras. Biological and Medical Physics, Biomedical Engineering. Springer, 2006. Chap. 1, pp. 1–18.

Updated October 28, 2022

[81] John Katsaras, Thad A. Harroun, Mu-Ping Nieh, Mukandan Chakrapani, M. J. Watson, and V. A. Raghunathan. "Neutron Scattering from Biomaterials in Complex Sample Environments". In: *Neutron Scattering in Biology - Techniques and Applications*. Ed. by J. Fitter, T. Gutberlet, and J. Katsaras. Biological and Medical Physics, Biomedical Engineering. Springer, 2006. Chap. 7, pp. 107–126.

Publications with CINS

[82] Dominic Ryan and Thad Harroun. *Submission to the Expert Review Panel on Medical Isotope Production: "The Canadian Neutron Centre"*. Candian Institute for Neutron Scattering. 2009.

[83] John Greedan, Carl Adams, Lynann Clapham, Thad Harroun, and John Root. *Planning to 2050 for Materials Research with Neutron Beams in Canada*. Ed. by Dominc Ryan, Mark Daymond, and John Root. Canadian Institute for Neutron Scattering, 2008. URL: http://www.cins.ca.

News articles (Quoted and authored)

[84] Tim Lougheed. "Chalk River reactor closure threatens to scatter research community". In: *University Affairs* (Jan. 2018). January 23. News article.

[85] Tim Lougheed. "Neutron quest". In: *Canadian Chemcical News* (Mar. 2018). March. News article.

[86] Thad Harroun. "Neutron Scattering in Canada is at a Turning Point". In: *Physics In Canada* 73.1 (2017). Opinion/Editorial. URL: https://pic-pac.cap.ca/index.php/Issues/view_article/3923.

[87] Thad Harroun and Dominic Ryan. "Canadians' health requires a secure source of medical isotopes". In: *Montreal Gazette* (Feb. 2010). February 22. Opinion/Editorial.

[88] Thad Harroun and Dominic Ryan. "Silence on the isotope report". In: *Winnipeg Free Press* (Feb. 2010). February 20. Opinion/Editorial.

[89] Erik Dickson. "Making sense of the isotope shortage". In: *Brock Press* (Sept. 2009). September 9. News article.

[90] Gloria Galloway and Karen Howlett. "Canada's medical isotope industry in peril as U.S. moves to make its own supply". In: *Globe and Mail* (July 2009). July 10. News article.

[91] Thad Harroun. "Why the reactor shutdown is really bad news for neutron research". In: *Globe and Mail* (July 2009). July 15. Opinion/Editorial.

[92] Gerry Klein. "Time to jump at opportunity". In: *The Saskatoon StarPheonix* (July 2009). July 16. Opinion/Editorial.

[93] Anna Mehler Paperny. "Nuclear inaction puts half-century of innovation at risk." In: *Globe and Mail* (June 2009). June 20. News article.

Updated October 28, 2022

Funding

2020-2030	CFI-Innovation Fund – "Building a Future for Neutron Scattering" Team member
2019-2020	ComputeCanada Resources for Research Groups – "Radiation therapy dose validation by Monte Carlo."
2017-2018	ComputeCanada Resources for Research Groups – "Molecular dynamics study of nanoparticle Newton's cradles."
2008,2009,2014,2015,2017	NSERC and Brock Undergraduate Summer Research Awards
2015-2020	NSERC Discovery Grant – "Biophysical Aspects of Vitamin E"
2016	OCE VIP/NSERC Engage Grant – "Investigating Parameters of Crystallization for Malic Acid Production"
2015-2017	ComputeCanada Resource Allocation RAC – "Coarse-grained large-scale simulation of a lipopolysaccharide membrane."
2008-2015	NSERC Discovery Grant – "Antimicrobial peptides and lipopolysaccharide model membranes."
2014	NSERC Research Tools and Instruments Co-applicant – "Multipurpose X-ray machine"
2006-2012	NSERC Major Resource Support Co-applicant – "The Canadian Neutron Beam Laboratory"
2008-2010	Research Corporation

Miscellaneous

2017-2020	President, Canadian Institute for Neutron Scattering
2006-Continues	Experimental proposal review committees; ORNL, NIST, CNBC
Memberships	American Physical Society, Biophysical Society, Canadian Association of Physicists, Neutron Scattering Society of America, Canadian Institute for Neutron Scattering
Ph.D. supervision	Three completed, three in progress
M.Sc. supervision	One completed
B.Sc.H. supervision	Six completed

Updated October 28, 2022