



Peter Hunter Gilbert, BS, MASc, PhD

Vanier Canada Graduate Scholar

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Work

NIST Center for Neutron Research
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Home

10022 Vanderbilt Circle, Apt. 4,
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Personal Profile

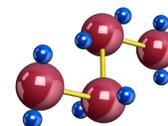
I am an adaptable and mindful instructor and researcher, with a record of award-winning teaching and collaborative research. As a highly-motivated investigator, I have published nine primary-authored works on fluid rheology and transport phenomena. During my graduate work, I investigated multiple research avenues simultaneously, while using my rheological expertise to support the work of my fellow colleagues in several research groups globally.

Education

PhD	Chemical Engineering - Queen's University (2019) <i>Advisor:</i> Prof. A.J. Giacomin, <i>Tier 1 Canada Research Chair</i> <i>Thesis:</i> "Molecular Orientation in Large-Amplitude Oscillatory Shear (LAOS) of Complex Fluids"
MASc	Chemical Engineering - Queen's University (2014) <i>Advisor:</i> Prof. A.J. Giacomin, <i>Tier 1 Canada Research Chair</i> <i>Thesis:</i> "Slip Heating in Die Drool"
BS	Chemical Engineering - UW-Madison (2013)

Research Experience

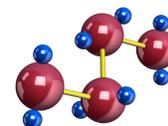
Oct. 14, 2019 - Present	Postdoctoral Researcher with Prof. Wagner and Dr. Liu University of Delaware Department of Chemical and Biomolecular Engineering <i>Center for Neutron Science, Newark, DE, USA</i> <ul style="list-style-type: none">• Stationed at NIST Center for Neutron Research• Studied surfactant-preservative structural interactions in medications using neutron scattering techniques
Jan. 6, 2014 – Sept. 30, 2019	Research Assistant under Prof. Giacomin Queen's University Department of Chemical Engineering <i>Polymers Research Group, Kingston, ON, CANADA</i> <ul style="list-style-type: none">• PhD Thesis: "Polymeric Liquid Molecular Orientation in Oscillatory Shear Flow"• MASc Thesis: "Slip Heating in Die Drool"• Developed macromolecular theory of polymer processing• Expanded transport phenomena theory into novel geometries



- Aug. 26, 2013 – **Research Assistant under Prof. Giacomini**
Jan. 3, 2014 *Rheology Research Center, Madison, WI, USA*
- Created novel theory for heat generation caused by wall slip and cohesive fracture during polymer processing
- Sept. 4, 2012 – **Student Researcher under Prof. Klingenberg**
May 30, 2013 *Complex Fluid Rheology Laboratory, Madison, WI, USA*
- Collected yield stress data on corn stover to inform transport behavior in an auger
- May 22, 2012 – **Research Intern under Prof. Kumar**
July 31, 2012 *University of Alberta*
Mechanical Engineering, Edmonton, AB, CANADA
- Created life cycle analysis of biochar production

Refereed Journal Publications

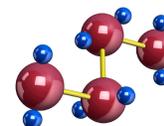
- (20) Gilbert, P.H. and A.J. Giacomini, "Small-Angle Light Scattering in Large-Amplitude Oscillatory Shear," *Physics of Fluids*, 31(10), 103104 (October, 2019).
- (19) Giacomini, A.J., R. Pasquino, C. Saengow and P.H. Gilbert, "Degradation in Parallel-Disk Rheometry," *Rheologica Acta*, 58(5) 1-15 (2019).
- (18) Kanso, M.A., L.M. Jbara, A.J. Giacomini, C. Saengow and P.H. Gilbert, "Order in Polymeric Liquids under Oscillatory Shear Flow," *Physics of Fluids*, (March, 2019).
- (17) Gilbert, P.H. and A.J. Giacomini, "Transport Phenomena in Bispherical Coordinates," *Physics of Fluids*, 31(2), 1-17 (Jan. 2019).
- (16) Giacomini, A.J. and P.H. Gilbert, "Degradation in Cone-Plate Rheometry," *Review of Scientific Instruments*, 89(12), 124101 (Dec. 2018).
- (15) Gilbert, P.H. and A.J. Giacomini, "Exact Analytical Durometer Hardness Scale Interconversion," *Journal of Testing and Evaluation*, 46(5) 1995-2032 (Sept. 2018).
- (14) Giacomini, A.J. and P.H. Gilbert, "Exact Solution for Cone-Plate Viscometry," *Journal of Applied Physics*, 122(17) 175101-1-14 (Nov. 2017).
- (13) Gilbert, P.H. and A.J. Giacomini, "Polymer Orientation Contributions in Large-Amplitude Oscillatory Shear Flow," *Journal of Non-Newtonian Fluid Mechanics*, 244, 85-103 (2017).
- (12) Gilbert, P.H., C. Saengow and A.J. Giacomini, "Transport Phenomena in Eccentric Cylindrical Coordinates," *AIChE Journal*, 63(8), 3245-3623 (Aug. 2017).
- (11) Jbara, L.M., A.J. Giacomini and P.H. Gilbert, "Macromolecular Origins of Fifth Shear Stress Harmonic in Large-Amplitude Oscillatory Shear Flow," *Nihon Reorogi Gakkaishi 日本レオロジー学会誌 (Journal of the Society of Rheology, Japan)*, 44(5), 289-302 (2016).
- (10) Gilbert, P.H. and A.J. Giacomini, "Molecular Origins of Higher Harmonics in Large-Amplitude Oscillatory Shear: Shear Stress Response," *Physics of Fluids*, 28, 103101 (2016).
- (9) Gilbert, P.H. and A.J. Giacomini, "Complex Polymer Orientation," *Polymer*, 104, 227-239 (Nov. 2016).
- (8) Hoy, G.S., A.J. Giacomini and P.H. Gilbert, "Die Drool and Polymer Degradation," *Polymer-Plastics Technology and Engineering*, 55(3), 242-258 (2016),
- (7) Younes, G.R., A.J. Giacomini and P.H. Gilbert, "Temperature Rise in a Verging Annular Die," *Journal of Polymer Engineering*, 36(7), 735-750 (2016).



- (6) Saegnow, C., A.J. Giacomin, P.H. Gilbert and C. Kolutawong, "Reflections on Inflections," *Korea-Australia Rheology Journal*, **27**(4), 267-285 (2015).
- (5) Gilbert, P.H. and A.J. Giacomin, "Wall Slip Heating," *Polymer Engineering and Science*, **55**(9), 2042-2049 (Sept. 2015).
- (4) Giacomin, A.J., P.H. Gilbert, D. Merger and M. Wilhelm, "Large-Amplitude Oscillatory Shear: Comparing Parallel-Disk with Cone-Plate Flow," *Rheologica Acta*, **54**(4), 263-285 (April 2015).
- (3) Giacomin, A.J., P.H. Gilbert, and A.M. Schmalzer, "Fourier decomposition of polymer orientation in large-amplitude oscillatory shear flow," *Structural Dynamics*, **2**(2), 024101 (March 2015).
- (2) Gilbert, P.H. and A.J. Giacomin, "Slip Heating in Die Drool with Viscous Dissipation," *International Polymer Processing*, **30**(1), 141-146 (March 2015).
- (1) Gilbert, P.H. and A.J. Giacomin, "Slip Heating in Die Drool," *The Canadian Journal of Chemical Engineering*, **93**(3), 580-589 (Feb. 2015).

Research Awards and Funding

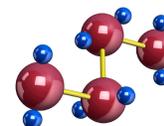
- (18) **International Tuition Award 2018-2019**, Queen's University, Kingston, ON, Canada (September, 2018). 1,700 CAD
- (17) **Queen's Graduate Award 2018-2019**, Queen's University, Kingston, ON, Canada (September, 2018). 1,334 CAD
- (16) **Queen's Graduate Award 2017-2018**, Queen's University, Kingston, ON, Canada (January, 2018). 3,000 CAD
- (15) **International Tuition Award 2017-2018**, Queen's University, Kingston, ON, Canada (December, 2017). 5,000 CAD
- (14) **Travel Award 2017-2018 for Oral Presentation at 2017 Society of Rheology Conference in Denver**, Chemical Engineering Department, Queen's University, Kingston, ON, Canada (October 6, 2017). 700 CAD
- (13) **International Tuition Award 2016-2017**, Queen's University, Kingston, ON, Canada (January, 2017). 5,000 CAD
- (12) **Vanier Canada Graduate Scholarship**, Natural Sciences and Engineering Research Council (NSERC), Government of Canada, Ottawa, ON, Canada (May 1, 2016 – April 30, 2019). 150,000 CAD
- (11) **International Congress of Theoretical and Applied Mechanics (ICTAM) Travel Award**, ICTAM (August 21-26, 2016). 500 CAD
- (10) **Queen's Graduate Award 2016-2017**, Queen's University, Kingston, ON, Canada (January, 2017). 4,000 CAD
- (9) **Society of Rheology Student Travel Grant for Kyoto International Congress of Rheology**, Society of Rheology (March 29, 2016). 1,300 CAD
- (8) **International Tuition Award 2015-2016**, Queen's University, Kingston, ON, Canada (January, 2016). 5,000 CAD
- (7) **Queen's Graduate Award 2015-2016**, Queen's University, Kingston, ON, Canada (January, 2016). 4,000 CAD
- (6) **Travel Award 2015-2016 for Oral Presentation at 2015 Society of Rheology Conference in Baltimore**, Chemical Engineering Department, Queen's University, Kingston, ON, Canada (October 19, 2015). 700 CAD



- (5) **Travel Award 2014-2015 for Poster Presentation at 2015 Canadian Society of Rheology Mason Award Symposium in Montreal**, Chemical Engineering Department, Queen's University, Kingston, ON, Canada (May 5, 2015). 350 CAD
- (4) **International Tuition Award 2014-2015**, Queen's University, Kingston, ON, Canada (January, 2015). 5,000 CAD
- (3) **Queen's Graduate Award 2014-2015**, Queen's University, Kingston, ON, Canada (January, 2015). 3,500 CAD
- (2) **Travel Award 2014-2015 for Oral Presentation at 2014 Society of Rheology Conference in Philadelphia**, Chemical Engineering Department, Queen's University, Kingston, ON, Canada (September 24, 2014). 700 CAD
- (1) **Queen's Graduate Award 2013-2014**, Queen's University, Kingston, ON, Canada (January, 2014). 2,334 CAD

Teaching Experience:

- Jan. 2019 - April 2019 **Teaching Fellowship (Sessional Instructor)**
CHEE 490: Polymer Formulations and Processing Technology, Queen's University
- Instructed polymer science course for fourth year students
 - Delivered lectures; supervised one TA; developed exams
- 2017 – 2019 **Teaching Assistant (TA) Training Facilitator**
Faculty of Applied Science, Queen's University
- Developed and delivered training for TAs in chemical, mechanical, civil and electrical engineering
- Oct. 30, 2018 **Guest Lecturer**
CHEE 330: Heat & Mass Transfer, Queen's University
- Invited to lecture for one week of the course
- 2017 – 2018 **Co-instructor with Prof. Giacomini**
CHEE 420: Laboratory Project III, Queen's University
- Supervised student-guided research projects
 - Evaluated student work and provided feedback
- Jan. 2016 – 2017 **Truth and Reconciliation Commission Blanket Activity Facilitator**
CHEE 361: Engineering Communications, Ethics and Professionalism, HLTH 101: Social Determinants of Health, Queen's University
- Facilitated blanket activities periodically
 - Aided discussion of aboriginal rights and professionalism
- Fall 2015 – present **Teaching Assistant for Prof. Escobedo**
CHEE 224: Transport Phenomena Fundamentals, Queen's University
- Guided active learning sessions and evaluated student work
- Winter 2014 – 2018 **Teaching Assistant for Prof. Giacomini**
CHEE 412: Transport Phenomena, Queen's University
- Aided course design, student evaluation and course logistics
 - Delivered most tutorials and lectured on select topics each year
- Fall 2014 **Teaching Assistant for Prof. Barz**
CHEE 330: Heat & Mass Transfer, Queen's University
- Delivered all tutorials and select lectures
 - Evaluated student work



- Jan. 20, 2011 – **Supplemental Instruction Facilitator**
May 12, 2013 InterEGR 150: Electricity and Magnetism Physics, UW-Madison, Undergraduate Learning Center, Madison, WI
- Created condensed “mini-lectures” on Physics 202 course
 - Developed worksheets for active learning sessions twice a week
 - Worked with students individually to identify strategies for completing the Physics 202 course

Teaching Awards

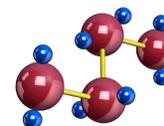
- (4) **2019 Dean’s Teaching Assistant Award (DTA)**, Faculty of Engineering and Applied Science, Queen’s University, Kingston, Canada (May 2019). 3,000 CAD
- (3) **Education Catalyst Award 2017-2018** (Best Teaching Assistant), Chemical Engineering Department, Queen’s University, Kingston, Canada (March 2018).
- (2) **Education Catalyst Award 2016-2017** (Best Teaching Assistant), Chemical Engineering Department, Queen’s University, Kingston, Canada (March 2017).
- (1) **Education Catalyst Award 2013-2014** (Best Teaching Assistant), Chemical Engineering Department, Queen’s University, Kingston, Canada (April 2014).

Student Supervision:

- | | |
|----------------------------|--|
| Summer 2015 | Hassan Awada , Undergraduate Summer Researcher
<i>Shear Stress Response in Polymer Molecular Models</i> |
| Summer 2016 | Loyal Jbara , (Co-Supervised) Undergraduate Summer Researcher
<i>Macromolecular Origins of Fifth Shear Stress Harmonic</i> |
| June 2018 –
April 2019 | Darin Cho , Undergraduate Thesis Student
<i>Molecular Models of Rod-like Viruses During Oscillatory Shear</i> |
| Sept. 2018 –
April 2019 | Nicole Wirawan , Undergraduate Thesis Student
<i>Viewing Molecular Orientation During Oscillatory Shear</i> |

Conference Oral Presentations

- (7) Gilbert, P.H. and A.J. Giacomin, “Exact-Solution for Cone-Plate Viscometry,” Abstracts, The Society of Rheology, 89th Annual Meeting, Denver, CO (October 8-13, 2017), p. 88. Errata: Both occurrences of “ $p/2$ ” should be “ $\pi/2$ ”.
- (6) Gilbert, P.H. and A.J. Giacomin, “Polymer Orientation Contributions,” Abstracts, The Society of Rheology, 88th Annual Meeting, Tampa, FL (February 12-16, 2017), p. 69.
- (5) Gilbert, P.H., C. Saengow and A.J. Giacomin, “Eccentric Cylindrical Coordinates,” Session RCF1, Paper 0314, Annual Meeting of the Canadian Society of Rheology, held in conjunction with the 66th Canadian Chemical Engineering Conference, Canadian Society for Chemical Engineering, Québec City, QC (October 16-19, 2016).
- (4) Gilbert, P.H. and A.J. Giacomin, “Molecular Origins of Higher Harmonics in LAOS: Shear Stress,” Paper No. TS.FM12-2.04, XXIV International Congress on Theoretical and Applied Mechanics (ICTAM), Montréal, CANADA (August 21-26, 2016), pp. 1-2.



- (3) Gilbert, P.H. and A.J. Giacomin, "Convexity in large-amplitude oscillatory shear loops," Abstracts, ICR 2016 - XVIIth International Congress on Rheology, Kyoto (August 8-13, 2016), p. .
- (2) Gilbert, P.H. and A.J. Giacomin, "Complex polymer orientation in LAOS," Abstracts, The Society of Rheology, 87th Annual Meeting, Baltimore, MD (October 11-15, 2015), p. 34.
- (1) Gilbert, P.H. and A.J. Giacomin, "Slip Heating in Die Drool," Abstracts, The Society of Rheology, 86th Annual Meeting, Philadelphia, PA (October 5-9, 2014), p. 81.

Conference Poster Presentations

- (2) Gilbert, P.H., A.J. Giacomin, A.M. Schmalzer and R.B. Bird, "Molecular origins of higher harmonics in large-amplitude oscillatory shear flow: shear stress response," Abstracts, American Physical Society, Annual March Meeting, Baltimore, MD (March 14-18, 2016), p. 644.
- (1) Giacomin, A.J., P.H. Gilbert and A.M. Schmalzer, "Fourier Decomposition of Polymer Orientation in LAOS," Poster Session Abstracts, The Canadian Society of Rheology, Mason Award Symposium, Montreal, QC, Canada (May 20, 2015).

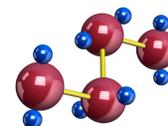
Conference Proceedings

- (4) Gilbert, P., and A.J. Giacomin, "Polymer Degradation in Cone-Plate Rheometry," Abstracts, The Society of Rheology, 90th Annual Meeting, Houston, TX (October 14-18, 2018), p.98.
- (3) Giacomin, A.J. and P.H. Gilbert, "Exact Analytical Interconversion Between Durometer Hardness Scales," Abstract, T1.00220, Annual March Meeting of the American Physical Society, New Orleans, LA (March 13-17, 2017).
- (2) Giacomin, A.J., L. Jbara and P.H. Gilbert, "Macromolecular Origins of Harmonics Higher than the Third in Large-Amplitude Oscillatory Shear Flow," 69th Annual Meeting of the APS Division of Fluid Dynamics, Portland, OR (November 20–22, 2016). Abstract KP1 106, Bulletin of the American Physical Society, 61(20), 376 (2016).
- (1) Hoy, Geoffrey Stephen, Alan Jeffrey Giacomin, and Peter Hunter Gilbert. "Die Drool and Polymer Degradation." *NOVEL TRENDS IN RHEOLOGY VI*. Vol. 1662. AIP Publishing, (28–29 July 2015).

Peer Reviewer For

AIP Advances (1)
Canadian Journal of Chemical Engineering (10)
Industrial & Engineering Chemistry Research (1)
International Polymer Processing (1)
Journal of Rheology (4)
*Physics of Fluids** (13)
Polymer (1)

* Star reviewer (three or more): 2017, 2018



Editorial Advisory Board Appointments

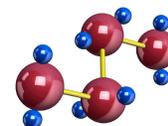
- (1) *Physics of Fluids*, AIP Publishing, Melville, NY; Volumes 32(1) – 33(12)
(Jan. 1, 2020 – Dec. 31, 2021)

Professional Society Memberships

American Chemical Society (2010)
 American Institute of Chemical Engineers (2011-2013)
 American Physical Society (2016)
 Canadian Society of Chemical Engineering (2016-Present)
 Canadian Society of Rheology (2014-Present)
 Society of Plastics Engineers (2014)
 The Society of Rheology (2013-Present)

Significant University Service

May 1, 2018 – April 2019	Queen's University Chemical Engineering Graduate Student Association – VP PhD	Represented PhD students at department level; Executive officer
Sept. 1, 2017 - Present	Queen's Senate Committee on Academic Procedures (SCAP) – Graduate Student Member	Rendered decisions on academic integrity; oversee graduation procedures
Aug. 1, 2017 – Present	Queen's Chemical Engineering Appointments Committee – Graduate Student Representative	Reviewed applications for and select new faculty members
June 2016 - present	CSChE Kingston Student Chapter - Founder	Ran annual Queen's-RMC ChemEng Poster Session; organized industry info sessions
Nov. 1, 2016	Queen's University Principal's Teaching Award for Promoting Student Inquiry Committee – Graduate Student Member	Selected award recipient
Nov. 1, 2016 – March 1, 2016	Queen's University Chemical Engineering Headship Selection Committee – Graduate Student Representative	Selected department head
May 1, 2016 – April 30, 2018	Queen's University Chemical Engineering Graduate Student Association – President	Lead the department graduate student association; Executive officer
Jan. 19, 2016 – Aug. 31, 2016	SGS Grad Maps Project Committee - Member	Developed a guide detailing requirements for each graduate discipline
Aug. 1, 2015 – July 31, 2018	Queen's University Chemical Engineering RTP Committee – Graduate Student Representative	Reviewed renewal, tenure and promotion applications
May 1, 2014 – Present	Chemical Engineering Department Display Renewal Project – Co-Founder	Developed concepts for and maintain department display cases



May 1, 2014 – April 30, 2015	Queen's University Chemical Engineering Graduate Student Association – VP PhD	Represented PhD students at department level; Executive officer
May 1, 2014 – April 30, 2015	Society of Graduate and Professional Studies – Chemical Engineering Representative	Elected representative to the university graduate student governing body

Community Volunteer and Outreach Activities

Oct. 2018 – April 2019	Kingston Volleyball Club – 15U Boys Assistant Coach	Developed youth volleyball athletes
Jan. 2018 – March 2018	Kingston Volleyball Club – 13U Boys Head Coach	Developed youth volleyball athletes
June 1, 2015 – Aug. 30, 2017	FC ChemEng – Co-Captain	Organized department intramural soccer team
May 16, 2012 – May 15, 2013	Students Participating in Chemical Education – President	Provided youth chemistry outreach; UW – Madison student organization
May 16, 2010 – May 15, 2012	Students Participating in Chemical Education – Treasurer	Provided youth chemistry outreach; UW – Madison student organization
Oct. 1, 2009 – May 15, 2010	Students Participating in Chemical Education - Member	Provided youth chemistry outreach; UW – Madison student organization

Status

b. Black River Falls, WI, USA (August 18, 1991)
United States Citizen; Canadian Temporary Resident (Work Permit)
Languages: English (Fluent), Spanish (Intermediate), French (Beginner)