Curriculum Vitae

MICHAEL ADRIAN BROOK

ADDRESS

Business: Department of Chemistry and Chemical Biology
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PERSONAL DATA

Citizenship: Canadian

EDUCATION

ETH-Zürich (Swiss Federal Institute of Technology) 1984-85
Postdoctoral Fellowship, Supervisor: Prof. Dr. Dieter Seebach

McGill University, Ph.D. (Dean's Honour List) 1983
Supervisor: Prof. Tak Hang (Bill) Chan (conferred 1984)
Thesis: *The Trimethylsilyl Group in Organic Synthesis*

University of Toronto, Honours B.Sc. 1978

CURRENT STATUS AT MCMASTER

Professor of Chemistry and Chemical Biology, tenured.
Member, School of Interdisciplinary Science
Member, McMaster School for Biomedical Engineering
Associate Member, Chemical Engineering

PROFESSIONAL ORGANIZATIONS

Member, Chemical Institute of Canada
Member, American Chemical Society
Member, Brockhouse Institute for Materials Research (McMaster)

EMPLOYMENT HISTORY

McMaster University, Professor (Promoted July 1997) 1997-present
McMaster University, Associate Professor (Promoted July 1991) 1991-97
McMaster University, Assistant Professor (Tenured July 1990) 1985-91

Prof. W.H. Rapson, University of Toronto 1979
Determination of potential mutagenic products of the aqueous chlorination of wood pulp.

Dr. O. Merecz, Ontario Ministry of the Environment 1978, 1977
Analysis of polycyclic aromatic hydrocarbons by capillary GC and HPLC.

Mr. T. Segeren, Chevron Asphalt, Calgary 1976
Analysis of aqueous asphalt emulsions.

HONOURS

Macromolecular Science & Engineering Award (Chemical Institute of Canada) 2017
Distinguished University Professor (< 2% of McMaster faculty) 2017
Otto Mønsted Visiting Professor at the Danish Polymer Centre at DTU 2016
Frederic Stanley Kipping Award in Silicon Chemistry, sponsored by The Dow Corning Corporation, administered by the American Chemical Society 2016
CSIRO Distinguished Visiting Scientist, Melbourne Australia 2011
ETS Walton Visiting Research Professor (Science Foundation Ireland) 2007
Borrowing from Biology to Synthesize "Natural" Silicones for Use in Highly Biocompatible, Blood Contacting and Ophthalmic Devices
Visiting Professor National Centre for Biomedical Engineering Science 2007
Killam Fellowship (Canada Council of the Arts) 2003-2004
President's Award for Instruction (McMaster) 2003
McMaster Student's Union Teaching Award (Faculty of Science) 2002, 1997
Invited Professor, Ian Wark Research Institute, University of South Australia 2002
Gold Key Honour Award, McMaster University 2000
Invited Professor, Unité Mixte CNRS BioMérieux Lyon 2000
Nomination for McMaster Students Association Teaching Award 2001, 1999 1998, 96, 94
Synergy Award, Conference Board of Canada, NSERC with Mark R. McDermott and Connaught Laboratories, one of 4 annual Canada-wide awards (Award given for Industry-University collaboration) 1996
Invited Professor, Université de Bordeaux, Bordeaux, France 1996
Invited Professor, Université Paul Sabatier, Toulouse, France 1996
Invited Professor, Universiteit van Amsterdam, Netherlands 1992-93
Dutch National Science Foundation Foreign Researchers Award (NWO Bezoekersbeurs) 1992-93
IUPAC Travel Award 1991
Ichikizaki Travel Award for Young Chemists 1988, 1990
NSERC Canada University Research Fellowship 1985-95
NSERC Canada Postdoctoral Fellowship 1984-85
NSERC Canada Postgraduate Scholarship 1979-83
T. Sterry Hunt Award (McGill) 1979-80
Society of Chemistry and Industry Gold Key 1978
Gollop Award in Chemistry (Toronto) 1978
S.H. Jane Silver Medal (Toronto) 1977
ACS Undergraduate Award in Analytical Chemistry 1977
Ontario Scholar 1974

SCHOLARLY AND PROFESSIONAL ACTIVITIES

Visiting Research Professor, Danish Polymer Center, Danish Technical University 2016

Lyngby, Denmark.

Visiting Research Professor, Polymer Science, Stellenbosch University, Stellenbosch, South Africa — 2014

International Symposium on Organosilicon Chemistry, Board of Directors, Member (Berlin 2014, Shandong, 2017) — 2012-2018

Sentinel: NSERC Strategic Network on Bioactive Paper, Board of Directors, Member — 2013-2015

International Workshop on Silicon-Based Polymers (ISPO), International Organizing Committee, Member, Aussois, France April 2015 — 2014-2015

Affiliate Professor, Concordia University, Montreal — 2013-2015

20/20: NSERC Ophthalmic Materials Network, Theme Leader, Materials. — 2009-2014

9th International Workshop on silicon-based polymers (ISPO-2013) September 22-25, 2013. Advisory Board, Member. — 2012-2013

20/20: NSERC Network on Ophthalmic Materials Technical Advisory Committee, member — 2008-2013

Symposium on Silicones and Silicone-Modified Materials VII, American Chemical Society National Meeting, Co-organizer, Boston Aug 21- 25, 2015, Member, Organizing Committee — 2014-2015

International Symposium on Silicon Chemistry, Board of Directors, Chair — 2009-2012

44th Silicon Symposium, Brock University, June 14, 15, Brock University, St. Catharines, ON, Member International Organizing Committee — 2012

Organosilicones in the Environment Workshop, Burlington ON, May 8,9 2012 Organizing Committee, member — 2011-2012

Sentinel: NSERC Network on Bioactive Paper Scientific Advisory Committee, Member — 2008-2010

15th International Symposium on Organosilicon Chemistry, Board of Directors, Member, Jeju Island Korea — May 2008.

16th International Symposium on Organosilicon Chemistry, Hamilton ON Aug. 2011, Co-Chair (with William Leigh) — 2008-11

Symposium on Silicones and Silicone-Modified Materials VI, American Chemical Society National Meeting, Co-organizer, San Diego March 25-28, 2012, Member, Organizing Committee — 2011-2012

ACS Award Committee, Chair (specific award is confidential) — 2009-2010

ACS Award Committee, Member (specific award is confidential) — 2005-2010

Symposium on Silicones and Silicone-Modified Materials V, American Chemical Society National Meeting, Washington, D. C., August 10-14, 2009, Member, Organizing Committee — 2008-2009

42nd Silicon Symposium Wayne NJ, June 9-11, 2009, International Advisory Committee, Member. — 2008-2009

Silicon Chemistry (a journal), Regional Editor, The Americas, — 2000-2008

40th Silicon SympoSium, Victoria, BC, 31 May – 2 June 2007 Advisory Board, Member. — 2006-2007

Innovalight, St. Paul, MN, Scientific Advisory Board, Member` — 2004-2007

5th Polymerization in Dispersed Media, Lyon France (2004) Member, International Organizing Committee — 2003-2004

Scientific Advisory Board, Ian Wark Research Institute, Member, University of South Australia — 2002-2004

The 3rd International Workshop on Organosilicon Polymers (2003) Member, Organizing Committee, June 23-25, 2003; Rensselaer Polytechnic Institute, Troy, NY — 2002-2003

Formulation Days: Silicones and Fluorocarbons, Lyon France, Dec. 9, 10, 2002 — 2002

(Journés formulation silicones et fluorés), Member, Organizing Committee
Perspectives on Silicon, Ian Wark Research Institute, Adelaide, July 15-19, 2002.
Member, Advisory Board, University of South Australia 2002
Visiting Professor, Ian Wark Research Institute, University of South Australia 2002
Visiting Professor, Unité Mixte CNRS BioMérieux Lyon, France 2000
Visiting Scientist, Trojan Technologies, London Ontario 1999
Can. J. Chem. Special Issue in honour of Adrian Brook, (pub. Nov. 2000),
Guest co-editor 1998-2000
XXX Organosilicon Symposium, Co-Chair 1997
Visiting Professor, Université de Bordeaux, Bordeaux, France 1996
Visiting Professor, Université Paul Sabatier, Toulouse, France 1996
Visiting Professor, University of Amsterdam 1992-1993
74th CSC Chemistry Conference
Program Co-Chair 1990-1991
Abstract Editor 1990-1991
Symposium Organizer 1990-1991
Conference Chairman, Southwestern Ontario
Undergraduate Chemistry Conference 1987

GOVERNMENT PANELS

External expert reviewer for select screening level risk assessments, Environment Canada, 2010
Scientific Advisory Panel on Breast Implants, Therapeutic Products Directorate, Medical Devices Bureau, Health Canada, member, March 2005
Expert Advisory Panel on Breast Implants, Therapeutic Products Directorate, Medical Devices Bureau, Health Canada, member, public panel, Sept. 2005
Expert Advisory Panel on Breast Implants, Therapeutic Products Directorate, Medical Devices Bureau, Health Canada, member, 2002

RECENT PUBLICATIONS

BOOKS

1 B **BROOK, M. A. *SILICON IN ORGANIC, ORGANOMETALLIC AND POLYMER CHEMISTRY*, WILEY: NEW YORK, 2000**, 608 pages, (704 including tables, and indices, SOLE AUTHOR), ISBN 0-471-19658-4

CONTRIBUTIONS TO BOOKS

16. F Jianfeng Zhang and Michael A. Brook, *Exploiting Lignin: a Green Resource*, In, *Mobilizing Chemistry Expertise to Solve Humanitarian Problems*, Ed., Ronda Grosse (Chemists Without Borders), ACS Symposium Series, 2017, Vol. 2, Chap., pp 91-116 accepted Apr. 25, 2017, published online Oct. 28, 2017 DOI: 10.1021/bk-2017-1268.ch006
15. ED *Progress in Silicones and Silicone-Modified Materials*, Eds. S. J. Clarson, M. J. Owen, S. D. Smith, M. E. Van Dyke, M. A. Brook, and J. M. Mabry, *ACS Symposium Series Vol. 1154*, **2013**, 196 pages, ISBN13 978-0-8412-2964-8. (Dec. 10, 2013).

CONTRIBUTIONS TO JOURNALS

252. C Mengchen Liao, Alyssa Schneider, Scott Laengert, Cody Gale, Yang Chen, and Michael A. Brook, *Living Synthesis of Silicone Polymers Controlled by Humidity, Eur. Polym. J.* accepted July 17, 2018, first published online July 19, 2018 DOI: 10.1016/j.eurpolymj.2018.07.023

251. C Cody B. Gale and Michael A. Brook, Deoxygenation of triglycerides under exceptionally mild conditions, *Green Chemistry*, accepted July 19, 2018, first published online July 20, 2018 DOI: 10.1039/C8GC01324A

250. F Fengyan Wang, Zhen Hu, Carla Abarca, Michael Fefer, Jun Liu, Michael A. Brook and Robert Pelton,* *Factors Influencing Agricultural Spray Deposit Structures on Hydrophobic Surfaces*, Colloids and Surfaces A: Physicochemical and Engineering Aspects **2018**, *53*, 288–294, accepted May 3. 2018, published online June 8, DOI: 10.1016/j.colsurfa.2018.05.074

249. F Brook, Michael A., *New Control Over Silicone Synthesis Using SiH Chemistry: The Piers Rubinsztajn Reaction*, *Chem. Eur. J.* Chem. Eur. J. **2018**, *24*, 8458 – 8469, accepted Feb. 21, 2018, (Concept article, invited). First published online, Feb. 22, 2018 DOI: 10.1002/chem.201800123/full

248 C Christopher Anand, Bob Berno, Stephen Boulton, Michael A. Brook, Richard Epand, Tomothy R. Field, Gillian R. Goward, Paul Hazendonk and Giuseppe Melacini,* A *Tribute to Alexander Davidson Bain: An NMR Pioneer and Mentor at McMaster University*, Concepts in Magnetic Resonance Part A, **2018**, *45A*, e21418, accepted Dec. 27, 2017. first in print online June 8, 2018, DOI: 10.1002/cmr.a.21418.

247. F Fatona, Ayodele; Berry, Richard; Brook, Michael; Moran-Mirabal, Jose, *Versatile Surface Modification of Cellulose Fibres and Cellulose Nanocrystals through Modular Triazinyl Chemistry*, *Chem Mater.* **2018**, *30* (7), 2424-2435, accepted March 16, 2018, first in print online March 16, 2018 DOI: 10.1021/acs.chemmater.8b00511

246. F Marlena Whinton, Timothy C. Hughes, Shuhua Peng, and Michael A. Brook, *Silicone Microemulsion Structures Are Maintained During Polymerization with Reactive Surfactants*, *Langmuir* **2018**, *34* (14), 4374-4381, submitted Sept. 1, 2017, accepted March 15, 2018, published ASAP online March 16, 2018 DOI: 10.1021/acs.langmuir.8b00240

245. F Talena Rambarran, Ferdinand Gonzaga, Ayodele Fatona, Michael Coulson, Sokunthearath Saem, Jose Moran-Mirabal, and Michael A. Brook* *Thermal Bonding of Silicones for Functional Microfluidics Using the Huisgen Cyclization*, *J. Polym. Sci., Polym. Chem.,* **2018**, *56* (6), 589-597, accepted Nov. 21, 2017, published online Dec. 27, 2017. DOI: 10.1002/pola.28930

244. F Ian D. Hosein[§+], Hao Lin[+], Matthew R. Ponte, Dinesh K. Basker, Michael A. Brook and Kalaichelvi Saravanamuttu,* *Waveguide encoded lattices (WELs): slim polymer films with panoramic fields of view (FOV) and multiple imaging functionality, Adv. Functional Mater.* **2017,** *27* (40), 1702242-n/a, accepted Aug. 9, 2017, published online Sept. 5, 2017, DOI: 10.1002/adfm.201702242

243. F Benjamin Macphail and Michael A. Brook[*] *Controlling Silicone-Saccharide Interfaces: Greening Silicones*, *Green Chemistry*, **2017**, *19*, 4373 – 4379, published online Aug. 9, 2017. DOI: 10.1039/C7GC02088K. Designated a 2017 HOT article.

242. C Jennifer Morgan, Tong Chen, Robin Hayes, Tara Dickie, Tomas Urlich and Michael A. Brook* *Facile Synthesis of Dendron Branched Silicone Polymers*, (invited manuscript for inclusion in special web issue celebrating 100 years of the Canadian Society for Chemistry, "CSC100: Celebrating Canadian Chemistry"). *Polymer Chem*istry **2017**, *8*, 2743 – 2746, accepted March 14, 2017, published online May 9, 2017. DOI: 10.1039/C7PY00260B

241. F Dinesh Kumar Basker, Oscar Alejandro Herrera Cortes, Michael A. Brook and Kalaichelvi Saravanamuttu,* *3-D Nonlinear inSCRIption of complex micro-comPonenTs (3D NSCRIPT): printing functional dielectric and metallodielectric polymer structures with nonlinear waves of blue LED light*, *Advanced Material Technologies,* **2017**, *2*, 1600236, published online, March 30, 2017, DOI: 10.1002/admt.201600236

240. C Scott E. Laengert, Alyssa F. Schneider, Eric Lovinger, Yang Chen and Michael A. Brook *Sequential Functionalization of a Natural Crosslinker Leads to Designer Silicone Networks*, *Chemistry An Asian Journal* **2017**, *12* (11), 1208-1212, accepted and published online March 10, 2017, in final form Apr 5, 2017. DOI: 10.1002/asia.201700160

SELECTED PATENTS

7. Michael A. Brook, Yongxin Wang, and Yang Chen, *Surface-Modifying Silicone Elastomers*, US 8,648,211 (to McMaster University), Feb. 11, 2014.
6. Brook, M.A., Gonzaga, F., Tian, H.; Ketelson, H. *Chelating silicon-based polymers*, US Patent 8,168,741 (to McMaster University and Alcon Laboratories), May 1, 2012 (filed Aug. 2, 2006).
5. Dong, H.; Brook, M.A.; Brennan, J.D. *Methods for Forming Macroporous Monolithic Methylsilsesquioxanes*. US Patent 7,582,214, Sept. 1, 2009 (filed June 20, 2006).
3. Zheng Zhang, Yang Chen, Jorge Cruz-Aguado, Richard J. Hodgson, Dina Tleugabulova, John D. Brennan, Michael A. Brook, *Protein Compatible Methods and Compounds for Controlling the Morphology and Shrinkage of Silica Derived from Polyol-Modified Silanes*, US Patent 7,375,168 (to McMaster University) May 20, 2008, filed 2004-04-01, Continuation in Part, 10/814,123, US 7,375,168.
2. Stan, R. S.; Brook, M. A. *Chelating silicone polymers,* US Patent 6,566,322 (to McMaster University), filed May 26, 2000; issued May 20, 2003.

RECENT PRESENTATIONS

AT MEETINGS, INVITED (AND KEYNOTE/PLENARY)

64. Michael A. Brook,* Ayodele Fatona, Sijia Zheng, and Yang Chen, *New Opportunities with Silicone Elastomers Using Sulfur Chemistry: Cure, Organofunctionalization and Recycling*, The 13th International Conference on "Advanced Polymers via Macromolecular Engineering" (APME 2019) Stellenbosch, South Africa from 15 - 18 April 2019.
63. Michael A. Brook,* Scott E. Laengert, Ben Macphail, Robert Bui, Sijia Zheng, Alyssa F. Schneider, Mengchen Liao, Yang Chen and Jianfeng Zhang, *The Greening of Silicones: Exploiting Natural Materials*, 18th International Symposium on Silicon Chemistry (ISOS-18), Shandong, China, Aug. 6-11, 2017 (Plenary).
62. Michael A. Brook, *Finding the cure: alternative strategies to crosslink silicone elastomers*, ISPO 11th International Workshop on Silicon-Based Polymers, Copenhagen, Denmark, July 2017 (Plenary).
61. Michael A. Brook, Mengchen Liao, Scott E. Laengert, Alyssa F, Schneider, Jennifer Morgan, John B. Grande and Jianfeng Zhang, *A strategy for controlled silicone polymer synthesis: Just add water (or a few other things)*, 100th Canadian Chemistry Conference and Exhibition, Toronto, Canada, May 2017, Invited, Macromolecular Science and Engineering Award lecture.
60. Michael A. Brook,* Jennifer Morgan, Alyssa Schneider and Scott Laengert, *Tailored Silicone Structures Lead to Tailored Silicone Properties*, 253rd American Chemical Society National Meeting, San Francisco, March, 2017, (Invited).
59. Michael A. Brook. (2016). *New Fillers and New Curing Mechanisms for Silicone Elastomers*. Smithers Rapra Silicone Elastomers World Summit, Cologne, Germany, Nov. 2016 (Invited)
58. Michael A. Brook,* *What Corriu Knew: Mechanism and Structure Matter.* A Scientific Tribute to Professor R.J.P. Corriu, Montpellier, France, Nov. 2016 (Invited).
57. Michael A. Brook, *Controlling silicone structures using the Piers-Rubinsztajn Reaction*, 47th Silicon Symposium, Portland OR June 19-23, 2016 (Keynote, Kipping Award Address).
56. Michael A. Brook, Yang Chen, Benjamin Macphail, Laura Zepeda-Velasquez, John B. Grande, Ayodele Fatona, Jose Moran-Mirabal, Marlena Whinton, Madiha F. Khan, *Designing Silicones to Control Interfaces*, 251st American Chemical Society Meeting, Mar. 13-17, 2016, San Diego, California (Invited, Kipping Award Address).
55. Brook, Michael A., Zepeda-Velasquez, Laura, DeWolf, Christine, Mansuri, Erum, Whinton, Marlena, *Reprocessable Silicone Boronate Gels*, Symposium on Polymer Gels as Advanced Soft Materials,

Francoise Winnik, Ryo Yoshida. Takahashi Miyata and Joanna Aizenberg, co-organizers, Pacifichem 2015, Hawaii, December 2015 (Invited).

53. Brook, Michael A., Zepeda-Velasquez, Laura; Whinton, Marlena; Chen, Yang; Grande, John B. Khan, Madiha F.; Rambarran, Talena; Fatona Ayodele and Jose Moran-Mirabal, *Water responsive silicone polymers*, Symposium on Fluorine & Silicon Containing Polymers, Joseph Mabry, and Scott Iacono, co-organizers, 14th Pacific Polymer Conference 2015, Hawaii, December 2015 (Invited).
52. Brook, Michael A., Zepeda-Velazquez, Laura C., Chen, Yunqing, Grande, Amanda S., *Thermoplastic silicone elastomers*, UNESCO/IUPAC Workshop & Conference on Macromolecules & Materials, 7-10 September 2015, Port Elizabeth, South Africa (Invited).
51. Michael A. Brook*, Nora Labbancz, Yang Chen, Yunqing Chen, Virginie Delhorbe, Nicholas Luong, Madiha Khan and Adam Kowalczyk. *Hydrosilanes + $B(C_6F_5)_3$ initiate the group transfer polymerization of methyl methacrylate*, 46th Silicon Symposium, Davis, CA June 21-24, 2015 (Invited).
50. J.B. Grande, J. Zhang, A. Schneider and Michael A. Brook, *Boron-catalyzed Siloxane Formation: New Routes to Precise 3D Silicones and Green Composites,* Symposium on Catalytic Transformations of Main Group Substrates, 98th Canadian Chemistry Conference, Ottawa, Canada, June 13-17, 2015 (Invited).
49. Brook, Michael A.; Zhang, Jianfeng, Fleury, Etienne, Schneider, Alyssa. *Green Silicones: Lignin Reinforced Foams*, ISPO 10th International Workshop on Silicon-Based Polymers, Aussois, France, April 2015 (Invited).
48. Michael A. Brook,* Yang Chen, Yunqing Chen, Nora Labbancz, Laura Dodge, Alyssa Schneider, Marlena Whinton, and Talena Rambarran, Strategies for the High Throughput Synthesis of Silicones, International Symposium on Silicon Chemistry (ISIS XVII), Berlin, Germany, Aug. 2014 (Invited).
47. Michael A. Brook, *Should Professors Bother to Patent Their Technologies?* 97th Canadian Chemical Society Conference, Vancouver, June 2014 (Invited).
46. M.A. Brook, Y. Chen, Y. Chen, L. Dodge, J.B. Grande, N. Labbancz, A.F. Schneider and A. Szelag, T.P. Bender, *Using Boron Chemistry to Create Silicone Polymers*, 97th CSC Conference, Vancouver BC, June 1-5, 2014 (Invited).
45. Michael A. Brook, *Manipulating Polysiloxane Surfaces Using Nature's Polymers*, POLYCHAR 22, University of Stellenbosch, South Africa, April 7-11, 2014 (**Keynote Lecture**).