

**TIMOTHY E. LONG, Ph.D.**

Department of Chemistry  
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Prof. Long maintains a vigorous partnership with diverse industries, including BASF, Elevance, Michelin, SABIC, ExxonMobil, Procter & Gamble, IBM, 3M, Kimberly Clark, Henkel, Bayer, Kraton Polymers, Toray, and Solvay. He has maintained a 20-member interdisciplinary research group and has been awarded ~ \$45M in research funding over the past 18 years at Virginia Tech. His group's continuing research goal is to integrate fundamental research in novel macromolecular structure and polymerization processes with the development of high performance macromolecules for advanced technologies, including drug and gene delivery, sustainable feed stocks, adhesives and elastomers, block copolymers and living polymerization, and biomaterials for health and energy.

**PROFESSIONAL EXPERIENCE**

- 2014-date      **Director, Macromolecules Innovation Institute**  
 Virginia Tech, ICTAS, Blacksburg, VA
- 2014-date      **Affiliated Faculty, School of Biomedical Engineering and Sciences (SBES)**  
 Virginia Tech-Wake Forest University, Blacksburg, VA/Winston-Salem, NC
- 2014-date      **Affiliated Faculty, Faculty of Health Sciences (FHS)**  
 Virginia Tech, Virginia Tech Carilion Research Institute, Roanoke, VA
- 2012-2014      **Associate Dean for Research and International Outreach**  
 Virginia Tech, College of Science, Blacksburg, VA
- 2011-2012      **Associate Dean of Strategic Initiatives**  
 Virginia Tech, College of Science, Blacksburg, VA
- 2009-2011      **Associate Director of Interdisciplinary Research and Education**  
 Virginia Tech, Fralin Life Science Institute, Blacksburg, VA
- 2003-date      **Professor of Chemistry**  
 Virginia Tech, Department of Chemistry, Blacksburg, VA  
 Member of the Macromolecules and Interfaces Institute (MII)
- 2001-2003      **Associate Professor of Chemistry**  
 Virginia Tech, Department of Chemistry, Blacksburg, VA  
 Member of the Polymeric Materials and Interfaces Laboratory (PMIL)  
 Member of Center for Adhesive and Sealant Science (CASS)
- 1998-2001      **Assistant Professor of Chemistry**  
 Virginia Tech, Department of Chemistry, Blacksburg, VA  
 Member of the Polymeric Materials and Interfaces Laboratory (PMIL)  
 Member of Center for Adhesive and Sealant Science (CASS)
- 1994-1998      **Principal Research Scientist**  
 Eastman Chemical Company, Kingsport, TN  
 Polymer Synthesis Research Laboratory (PSRL)

- 1993-1994     **Senior Research Chemist**  
Eastman Chemical Company, Kingsport, TN  
Polymer Synthesis Research Laboratory (PSRL)
- 1990-1994     **Senior Research Scientist**  
Eastman Kodak Company, Rochester, NY  
Corporate Research Laboratories (CORL)
- 1987-1990     **Advanced Research Scientist**  
Eastman Kodak Company, Rochester, NY  
Corporate Research Laboratories (CORL)

## EDUCATION

- 1987           Ph.D., Chemistry, Virginia Tech, Blacksburg, VA 24061  
Dissertation Title: *"Anionic Synthesis and Characterization of Alkyl Methacrylate Containing Polymeric Systems"* directed by Prof. James E. McGrath
- 1983           B. S., Chemistry, St. Bonaventure University, Olean, NY 14468  
Dissertation Title: *"Phthalic Anhydride Crosslinked Bisphenol-A Diglycidyl Ether Resins,"*  
directed by Prof. Justin W. Diehl

## HONORS AND AWARDS

- Received the John C. Schug Research Award from the Department of Chemistry, 2017
- Inducted into the AAAS Fellows program, 2016
- 2015 VA Outstanding Scientist of the Year, April 2015
- Received IBM Faculty Award, 2012-2014
- Received Adhesion Society's Robert L. Patrick Fellowship Award, 2014
- Program Chair, Adhesion Society Conference, 2014
- Virginia Tech Finalist for the SCHEV Outstanding Faculty Award, 2014
- Regional Chair, IUPAC World Polymer Congress, MACRO 2012 at Virginia Tech, June 2012
- Inducted into the ACS Polymer Division Fellows program, 2012
- Selected to receive the Mark Scholar Award, 2012
- Received Pressure Sensitive Tape Council, Carl Dahlquist Award, 2012
- Received PMSE Cooperative Research Award (with Kraton Polymers, Carl Willis), 2011
- Received the Virginia Tech Alumni Award for Research Excellence, 2010
- Received the honor of American Chemical Society Fellow, 2009
- Elected Chair, Polymers Gordon Research Conference (GRC), summer 2009
- Invited Wake Forest University, Affiliated Professor of the Wake Forest Institute for Regenerative Medicine (WFIRM), 2008
- Chair-elect for the 2012 Polycondensation Conference, 2008
- Symposium Co-chair for the 2012 IUPAC World Polymer Congress, 2008
  - The Congress provides an international forum for scientific discovery, professional networking, research collaboration, interdisciplinary education, and dissemination of our most recent scientific advances. The opportunity for VA Tech to host this congress demonstrates VA Tech's leadership in the field of polymer chemistry.
- IRTF Interdisciplinary Research Team Fellowship Award, with Profs. Duncan and Thatcher

- Collano Innovation Award, Lucerne, Switzerland, September 2006
  - Recognition and monetary award for research efforts in the field of adhesion science
- Chair-elect, 2009 Polymers (East) Gordon Research Conference, 2005
- Chair, ACS Division of Polymer Chemistry, 2005
  - The Chair of the ACS Division of Polymer Chemistry was one of the highlights of my professional career. This was an elected position from one of the largest divisions in the ACS. During my term as chair I focused my efforts towards 1) Collaboration with Other International Chemical Societies; 2) Initiatives to Promote the ACS to Women, Minorities, and Students; and 3) Emergence of Traditional Chemistry Programs and Meetings with Biochemistry, Life Sciences, Medical Sciences, and Biology.
- Faculty Research Award, Department of Chemistry, May 2003
- Panhellenic Council of Virginia Tech Certificate of Appreciation for Teaching Excellence, Spring 2003
- Top Oral Presentation, ASI USER FORUM, June 2002
- ACS, Division of Polymer Chemistry, Chair-elect, 2002-2005
- IBM Faculty Award (\$40,000 unrestricted funding), July 2002
- 3M Company Faculty Award (\$15,000/year unrestricted funding), 2000-2002
- Macromolecular Secretariat, 2000
  - American Chemical Society, General Secretary
- Sigma Xi, Professional Fraternity, 1999.
  - Elected Full Member at VA Tech
- Faculty Signature Award, 1999.
  - GenCorp Co. (OMNOVA), Akron, OH, \$5000 Unrestricted Award.
- IUPAC Young Observer, 1999.
  - Representing USA at IUPAC 1999 in Berlin, FRG. Sponsored by the National Research Council.
  - Focused on macromolecular materials in the international chemical industry; Program development for improved public perception of Polymer Chemistry.
- Invited USA Industrial Speaker, 1997.
  - Invited presentation at the 5<sup>th</sup> Pacific Polymer Conference, Korea
- National Technical Programming Co-chairperson, 1994-1997.
  - American Chemical Society Division of Polymer Chemistry

## MAJOR RESEARCH ACCOMPLISHMENTS

### Virginia Tech, Department of Chemistry, 1998-Present

- Co-Chair of the 2015 NSF Workshop -FEWS: Food-Energy-Water Systems Challenging Chemists in the 21<sup>st</sup> Century in Arlington, VA.
- Invited ACS Webinar, "3D Printing: From Molecules to Manufacturing" January 22, 2015
- Article on "Printing 3-D Conductive Materials With The Help Of Ionic Liquids" has been featured in Chemical & Engineering News. November 19, 2014.
- Invited Perspective Article in Science, "Toward Recyclable Thermosets," 2014 (344), 706-707.
- Generated ~\$43 million research funding during 1998-2016.
- Regional Organizational Committee and Chair of the 2012 IUPAC World Polymer Congress at VT
- Article on "DNA-Inspired Hierarchical Polymer Design: Electrostatics and Hydrogen Bonding in Concert" has been featured on our Materials Science News in 2012.

- Received Virginia Tech's Alumni Award for Research Excellence (AARE) in 2010
- PI, DOD-MURI award (\$5 million/5 years) on Ionic Liquids in Electroactive Devices (ILEAD).
- PI, DOD-MURI award (\$5 million/5 years) on Macromolecular Architecture for Performance (MAP).
- Co-PI, NSF IGERT award (\$3.2 million/3 years) on Macromolecular Interface with Life Sciences (MILES) with Prof. C. Thatcher (Vet-med) and Prof. S. Duncan (Food Science and Technology).
- Director, US Army MCOE Multilayered technologies for armored structures and composites (multitask): Teaming the Army Research Laboratories (ARL) with Virginia Tech (6 co-PIs) (\$4.5 million/9 years)
- From 1999 to 2016, **227 peer-reviewed publications** (including *J. Amer. Chem. Soc.*, *Macromolecules*, *J. Poly. Sci.*, *Biomacromolecules*, *Polymer Chemistry*, and *Science*).
- Invited to author "Polymer Chemistry: An Introduction", Oxford Press. (2009)
- Chair-elect, 2009 Polymers (East) Gordon Research Conference (2005).
- Chair of the American Chemical Society Division of Polymer Chemistry, 2005; elected position from 7,000 members.
- Established a research group comprising 15 graduate students, 5 undergraduate students, and 5 postdoctoral fellows and developed an integrated research and education program in polymer synthetic chemistry.
- Pioneered the use of in-situ infrared spectroscopy including near- and mid-infrared for the investigation of polymerization processes including both living chain polymerization and step-growth polymerization.
- First to disclose synergy of multiple hydrogen bonding in concert with microphase separation (*JACS* 2002).
- Discovery of new families of polyester resins that are amenable to thermo-reversibility using telechelic inter-molecular interactions.
- Discovered novel living anionic and radical polymerization methodologies leading to the formation of unique polymer compositions and architectures.
- Initiated new research avenues dealing with the macromolecule-biomolecule interface including carbohydrate mediation in aqueous polymerization, phospholipid interesterification, and solvent-free redox catalysts for oxidatively crosslinked polyether coatings.
- Discovery of new families of olefin-containing polymeric materials based on 1,3-cyclohexadiene and norbornene derivatives.
- First to demonstrate the nano-assembly of asymmetric triblock copolymers for the preparation of novel switchable polarity films.
- Developed the use of statistics and design of experimentation as an integral part of students' research efforts.

#### Eastman Chemical and Eastman Kodak Companies, 1987-1998

- Co-authored over 25 U.S. and European issued patents.
- Discovery of novel macromolecular structures based on the investigation of novel polymerization processes including sol-gel chemistry at selective chain locations and the utility of lithium dialkylamides as new families of ionic polymerization initiators.
- Synthesis of novel families of block copolymers based on protected acidic functionality for the successful blend compatibilization of thermoplastics including poly(ethylene terephthalate) and poly(phenylene oxide).
- Commercialization of a new family of nematic thermotropic liquid crystalline polyesters, Thermx™ LCP

- Discovery of a new family of low color polyamide additives for the scavenging of acetaldehyde in polyester compositions.
- Developed technical strategy for the development of novel polyester resins exhibiting improved gas barrier properties using unique combinations of resorcinol based monomers, crystallization nucleation, and ion-containing polyesters

### INVITED LECTURES

Presented at Industrial Laboratories

Company	Host	Year of Lecture(s)
P&G	Dr. Travis Hodgdon	2016
National Tire Research Center	Dr. Chris Hare	2016
RJ Reynolds	Dr. Tony Gerardi	2016
Exxon Mobil	Yong Yang	2016
National Security Administration		2016
Michelin	Dr. Elizabeth Hotaling	2016
Carlisle	Dr. Bill Schneider	2016
Solvay	Dr. Kermit Kwan	2016
Michelin	Dr. Elizabeth Hotaling	2016
Bayer		2016
Michelin	Dr. Elizabeth Hotaling	2016
Solvay	Dr. Alessandro Bongiovanni	2015
Kraton Polymers	Dr. Carl Willis	2015
Brewer Science	Dr. Jyoti K. Malhora	2015
Nike	Mark McNamee	2015
BASF	Dr. Robert Schmeltzer	2015
Waters	Dr. Ken Langley	2015
Northrop Grumman	Dr. John Black	2015
Henkel	Dr. Dave Dworak	2015
SABIC	Dr. Roy Odle	2015
DSM	Dr. Ronald Tennebroek	2015
Henkel	Dr. Cristina Dejesus	2014
Michelin	Dr. Don Lorey	2014
IBM Almaden	Dr. Robert Allen	2014
Procter & Gamble	Dr. John Layman	2014
Eastman Chemical	Dr. Jeremy Lizotte	2014(twice)
3M	Dr. Ann Fornof	2014 (twice)
DSM	Dr. Ad Overbeek	2014
Kraton Polymers	Dr. Carl Willis	2014
Nolax	Dr. Krishna Nookala	2014
BASF	Dr. Martin Weber	2014
Kraton Polymers	Dr. Carl Willis	2013

Align Technology	Sirini Kaza	2013
Smart Coatings		2013
Henkel	Dr. Cristina Dejesus	2013
LORD Corporation	Dr. Manoj Ajbani	2013
Henkel	Dr. Cristina Dejesus	2012
Solvay	Dr. Kermit Kwan	2012
Kimberly Clark	Dr. Clay Bunyard	2012
Allergan		2012
LORD Corporation	Dr. Manoj Ajbani	2012
Kraton Polymers	Dr. Carl Willis	2012
Kimberly Clark	Dr. Clay Bunyard	2011
Kimberly Clark	Dr. Clay Bunyard	2010
Kraton Polymers	Dr. Carl Willis	2010 (twice)
Kimberly Clark	Dr. Clay Bunyard	2009
Gordon Research Conference	Gordon Research Conference	2009
ILEAD MURI Review	Dr. Dave Stepp	2009
Oak Ridge Nat. Lab. & DOE Review	Dr. Jimmy Mays	2009
National Institute of Standards Tech	Dr. Kathryn Beers	2009
Procter and Gamble	Dr. Andy Wnuk	2009
Invisalign Technologies, Mexico	Dr. Srin Kaza	2008
Collano Industries, Switzerland	Dr. Fedrick Stollen	2008
DuPont	Dr. Anne Norris	2008
Brewer Science	Dr. Rama Pagligaddia	2008
Bayer Materials Science	Dr. Karl Haider	2008
Dow Chemical	Dr. Leo Lopez	2008
Procter and Gamble	Dr. Ed Urankar	2008
Dow Corning	Dr. Ann Norris	2006
Solvay Corp.	Dr. Tom Balsono	2006
Rohm and Hass	Dr. Kevin Miller	2006
Alltech Corp.	Dr. Ed Smith	2006
Kimberly Clark	Dr. Clay Bunyard	2006, 2007, 2008
Oak Ridge National Laboratory	Dr. Phil Britt	2005
Ciba Specialty Chemicals	Dr. Mark Andrews	2004
Army Research Laboratories	Dr. Steve Jensen	2003, 2004-2008
IBM T.J. Watson Research Center	Dr. Jeff Hedrick	2002, 2005
Reichhold Chemicals	Dr. Martin Rogers	2001
Lord Corporation	Dr. Kirk Abbey	2001
NASA Langley	Dr. Emiel Siochi	2001
Bostik-Findley Company	Dr. David Jackson	2001
Coca Cola Co.	Dr. Mark Rule	2001
Adhesives Research	Dr. Bob Isai	2001
Ciba Vision	Dr. Jackie Schemmer	2001
Kraton Polymers	Dr. Carl Willis	2001 - 2008

Shell Chemical Co.	Dr. Carl Willis	1999, 2002
Air Products	Dr. Lloyd Robeson	2001
Eastman Chemical Co.	Dr. S. Shu	2000 - 2008
National Starch	Dr. Bob Humphreys	2000, 2002, 2003, 2004
ASI Applied Systems	Dr. Jennifer Andrews	2000
Eastman Chemical Company	Dr. Scott Armentrout	1999, 2000, 2001, 2002
Carilion Biomedical Institute	Dr. Dennis Fischer	2000
3M Company	Dr. Larry Clemens	1999-2008
Lithium Division FMC	Dr. Jim Schwindeman	2000, 2001
Eastman Kodak Company	Dr. James Elman	1999, 2003
BASF Germany	Dr. Martin Weber	1999, 2008
IBM Almaden	Dr. Robert Allen	1999
Argonaut Technologies	Dr. Jeff Labadie	1999
GenTech Optics	Dr. Hsinjin Yang	1999

#### Lectures Presented at Universities

<b>University</b>	<b>Host</b>	<b>Year of Lecture</b>
Wooster Polytechnic Institute		2016
University of Warwick	Prof. David Haddleton	2016
Waseda University	Prof. Takeo Suga	2016
Chiba University	Prof. Takashi Karatsu	2016
University of Southern Mississippi	Prof. Derek Patton	2016
Arizona State University	Prof. Matthew Green	2016
University of Tennessee	Prof. Mark Dadmun	2016
Case Western Reserve University	Prof. David Schiraldi	2016
Research Center – Arlington VA, Virginia Tech	Prof. Shashank Priya	2016
University of Washington	Prof. Alshakim Nelson	2016
Zhejiang University	Prof. Feihe Huang	2015
Shanghai Jiaotong University	Prof. Xinyuan Zhu	2015
Soochow University	Prof. Feng Yan	2015
Tongji University	Prof. Jianzhong Du	2015
VTSuN, Virginia Tech	Prof. Peter Vikesland	2015
MII Review, Virginia Tech	Prof. Chris Williams	2015
VTCCD, Virginia Tech	Prof. David Kingston	2015
Waseda University	Prof. Takeo Suga	2014
Northeastern University	Prof. Ke Zhang	2014
VTCCD, Virginia Tech	Prof. David Kingston	2014
Old Dominion University	Prof. Bala Ramjee	2013
Ferrum College	Prof. Maria Puccio	2013
MII Review, Virginia Tech	Prof. Richard Turner	2013
MSE, Virginia Tech	Prof. Levon Asryan	2013



VTCCDD, Virginia Tech	Prof. David Kingston	2013
MPI of Colloids and Interfaces	Prof. Jiayin Yuan	2013
Case Western Reserve University	Prof. LaShonda Korley	2012
University of South Carolina	Prof. Anand Viswanath	2012
University of Alabama	Prof. Jason Bara	2012
University of Akron		2011
MII Review, Virginia Tech	Prof. Richard Turner	2010
University of Akron	Prof. Coleen Pugh	2010
Rensselaer Polytechnic Inst.	Prof. James Moore	2009
University of Illinois	Prof. Jim Economy	2009
Tulane University	Prof. Scott Grayson	2009
MII Review, Virginia Tech	Prof. Richard Turner	2009
Mt. Holyoke College	Prof. Wei Chen	2009
Virginia Tech Highlands Seminar	Prof. Joe Merola	2009
Waseda University, Japan	Prof. Nishide	2008
University of Georgia	Prof. Yan Geng	2008
Colorado School of Mines	Prof. Dan Knauss	2007
University of Rochester	Prof. I.M. Mitch	2006
University of Connecticut	Prof. Alex Assandie	2006
University of S. Carolina	Prof. Dave Pond	2006
University of Delaware	Prof. Kristi Kiick	2006, 2008
University of Connecticut	Prof. Bob Weiss	2006
University of Tennessee	Prof. Jimmy Mays	2005
University of CA at Irvine	Prof. Zhibin Guan	2005
Caltech	Prof. David Tirrell	2005
University of Cincinnati	Prof. Theresa Reineke	2005
Case Western University	Prof. Stuart Rowan	2003
University of Hamburg, Germany	Prof. Hans Kricheldorf	2002
University of Southern Miss	Prof. Rob Storey	2002
Penn State University	Prof. Ralph Colby	2002, 2009
Clark Atlanta University	Prof. Eric Mintz	2001, 2005
Rutgers University	Prof. Kathryn Uhrich	2000, 2004, 2005
Univ. of Massachusetts, Amherst	Prof. Jacque Penelle	1999, 2001, 2002
Virginia Commonwealth Univ.	Prof. Ray Ottenbrite	1999
University of Hamburg, Germany	Prof. Hans Kricheldorf	1999, 2002
University of Dresden, Germany	Prof. Brigitte Voit	1999, 2005
Rochester Inst. of Tech.	Prof. Kay Turner	1999
James Madison University	Prof. Donna Masuda	1999, 2008
Bridgewater University	Prof. I. Bretheron	1999
University of Akron	Prof. William Brittain	1998
Osaka University, Japan	Prof. Y. Morishima	1997
Virginia Tech	Prof. J. E. McGrath	1996
St. Bonaventure University	Prof. Justin Diehl	1992



University of North Carolina	Prof. Joseph DeSimone	1991, 2006
University of Strasbourg, France	Prof. Emile Franta	1990
Virginia Tech	Prof. Judy Riffle	1990
University of Mainz, Germany	Prof. Axel Mueller	1990
Cornell University	Prof. Chris Ober	1989, 2003
University of Connecticut	Prof. Jeff Koberstein	1988
University of Massachusetts	Prof. Scott Barton	1988

## TEACHING EXPERIENCE

### Virginia Tech

#### *Fall 1999 – Spring 2017*

<b>Course</b>	<b>Number</b>	<b>Credits – Students</b>
Fundamentals of Macromolecular Science and Engineering	CHEM 5015	3 credits – graduate (team taught)
International Perspectives on the Nanoscience of Macromolecules*	COS 4984	3 credits – undergraduates (team taught)
Integrated Science	COS 2984	3 credits – undergraduates (team taught)
Integrated Science Lab	COS 2984	2 credits - undergraduates
Introduction to Nanoscience 1015	COS 2984	3 credits – undergraduates (team taught)
Synthesis of Macromolecules	CHEM 5704	3 credits – graduate (team taught)
Green Chemistry	CHEM 4514	3 credits – undergraduate & graduate
Macromolecular Laboratory	MACR 5016	3 credits – graduate (team taught)
Organic Polymer Chemistry	CHEM 4534	3 credits – undergraduate and graduate
Organic Chemistry	CHEM 2535	3 credits - undergraduate
Organic Chemistry	CHEM 2536	3 credits - undergraduate
Laboratory in Polymer Science	CHEM 4534	2 credits - undergrad & graduate (team taught)
Synthesis of Macromolecules	CHEM 5704	3 credits - graduate (team taught)
Polymer and Surface Science	CHEM 4634	3 credits - undergrad & graduate (team taught)
Biomolecule-Macromolecule Interfaces**	CHEM 5984	1 credit - undergraduate and graduate
Green Chemistry	CHEM 6464	1 credit – undergraduate and graduate
Polymer Chemistry at the Biology Interface Laboratory	FST/CHEM/BMVS 5884	2 credit - graduate (team taught)

\* New education abroad College of Science WinterMester course developed to nurture an understanding of the role of science in culturally diverse communities at leading institutions in Western Europe.

\*\* New inter-disciplinary course developed to address two university cross-cutting initiatives, and funded from a grant awarded from the Center for Excellence in Undergraduate Teaching (CEUT).

## Teaching Evaluations

**1999 – Fall 2016**

<u>Course</u>	<u>Term</u>	<u>Number of Students</u>	<u>Overall Evaluation</u>
Fundamentals of Macromolecular Science and Engineering	Fall 2016	13	4.56
Laboratory in Polymer Science 4074	Spring 2016	7	5.5
Fundamentals of Macromolecular Science and Engineering	Fall 2015	9	5.6
Laboratory in Polymer Science 4074	Spring 2015	10	5.5
Organic Chemistry 2535	Fall 2014	190	5.4
Laboratory in Polymer Science 4074	Spring 2014	11	5.0
International Perspectives on the Nanoscience of Macromolecules	Winter 2014	20	NA
Organic Chemistry 2535	Fall 2013	122	5.50
Laboratory in Polymer Science 4534	Spring 2013	9	5.6 (Out of 6.0)
Integrated Science Lab	Fall 2012	25	NA
Integrated Science	Spring 2012	11	NA
Integrated Science Lab	Fall 2011	12	3.6 (out of 4.0)
Introduction to Nanoscience 1015	Fall 2011	17	3.8
Synthesis of Macromolecules 5704	Fall 2011	14	3.8
Green Chemistry 4514	Spring 2011	45	3.7
Synthesis of Macromolecules 5704	Fall 2010	20	3.9
Green Chemistry 4514	Spring 2010	38	4.0
Synthesis of Macromolecules 5704	Fall 2009	14	3.9
Organic Chemistry of Polymers 4534	Fall 2008	40	3.8
Organic Chemistry of Polymers 4534	Fall 2007	35	3.9
Organic Chemistry of Polymers 4534	Fall 2006	24	4.0
Poly. Chem. at the Bio. Interface Lab.	Spring 2007	6	NA
Poly. Chem. at the Bio. Interface Lab.	Spring 2006	8	NA
Green Chemistry	Spring 2006	18	NA
Organic Chemistry of Polymers 4534	Fall 2005	18	3.8
Organic Chemistry of Polymers 4534	Fall 2004	24	3.9
Organic Chemistry 2536	Spring 2004	192	3.7
Polymer and Surface Science 4634	Spring 2004	10	NA
Green Chemistry 6464	Spring 2003	20	NA
Organic Chemistry of Polymers 4534	Fall 2003	23	3.9
Organic Chemistry 2536	Spring 2003	127	3.7
Organic Chemistry of Polymers 4534	Fall 2002	36	4.0
Organic Chemistry 2536	Spring 2002	275	3.4
Macromolecular Laboratory	Fall 2001	12	NA
Organic Chemistry of Polymers 4534	Fall 2001	35	3.8
Organic Chemistry 2536	Spring 2001	188	3.4
Organic Chemistry 2535	Fall 2000	110	3.7
Special Topics Chemistry 5984	Spring 2000	10	3.8

Organic Chemistry 2535	Spring 2000	70	3.7
Organic Chemistry 2535	Fall 1999	180	3.7

#### Extension Short Courses and Seminars Taught

Polymer Short Course, 3M, 2011-present, offered one time per year, team taught.

Polymer Science and Engineering Short Course, Dow Chemical, 2015, offered one time per year, team taught.

Principles of Polymers, ACS, 1999-present, offered three times per year, team-taught.

Adhesion Science MII, Virginia Tech, 2015, offered one time per year, team-taught.

Adhesive Principles, Adhesive & Sealant Council, 2000-present, offered one time per year at off-site meeting locations.

### SCIENTIFIC COMMUNITY SERVICE

#### Proposal and Panel Review

- Invited, Petroleum Research Fund (PRF) Board, American Chemical Society Proposal Reviewer, 2012-Present, 1999-2000
- Invited to review 10-12 NSF proposals per year
- Invited to review Army Research Office proposals, Dreyfus Foundation proposals, Cotrell Scholars
- Invited to participate on the scientific advisory board of 8 national and international companies

#### Manuscript Review

Review 20-30 manuscripts annually for the following journals:

- Macromolecules, Publisher – American Chemical Society
- Journal of Polymer Science: Part A Chemistry, Publisher – Wiley
- Polymer International, Publisher – SCI, Wiley
- Polymer Engineering and Science, Publisher – Society of Plastic Engineers
- Journal of American Chemical Society, Publisher – American Chemical Society
- Science, Publisher – The American Association for the Advancement of Science
- Polymer, Publisher – Elsevier Sciences, Ltd.
- Advanced Functional Materials
- Journal of Materials Research
- Materials Letters
- Journal of Adhesion
- Langmuir
- Macromolecular Chemistry and Physics
- Macromolecular Rapid Communications
- Biomacromolecules
- Macromolecular Biosciences
- Bioconjugate Chemistry

#### Member Editorial Board

- *Advances in Polymer Science, Springer*

- *Biomacromolecules*
- *Polymer International*
- *Macromolecular Chemistry and Physics*
- *Macromolecular Rapid Communications*
- *Macromolecular Biosciences*
- *Polymer Chemistry*

## UNIVERSITY, COLLEGE AND DEPARTMENTAL SERVICE

### University Administration

- First Acting Director of The Center for Performance Packaging Science (CP2S) 2016-Present
- ICAT Catalyst Faculty Retreat Fellow 2016-Present
- Strategic Growth Areas – Materials Division Faculty Search, Committee member 2016-Present
- Virginia Bioscience Health Research Corporation Board Member 2013-Present
- COS Dean Search Committee Member, 2015-2016
- Geosciences Department Head Search Committee Member, 2015-2016
- Building Committee for the Feasibility Study for Translational Medicine, 2012-2015
- Innovation Ecosystem Review Committee, 2012-Present
- Chair, Alumni Award for Research Excellence, 2012-2015
- Co-Chair, ICTAS NanoBio Thrust, 2011-2015
- ACS Sci-Mind Team Member
- Co-Chair, ACS Forum for Discovery in Life Sciences, 2010
- Moderator, Interdisciplinary Scholars for Emerging Frontiers in Life Sciences, 2010
- Search Committee, Director of Undergraduate Research, 2010
- Graduate Recruiting Weekend Chair, Fralin Life Science Institute, Spring and Fall 2010
- Graduate School Workshop for Interdisciplinary Education and Research, 2008
- ICTAS Faculty Advisory Board, 2006-2008
- Scientific Advisory Board, EIGER IGERT, 2008-2009
- Associate Director, Macromolecules & Interfaces Institute (MII), Industrial Outreach, 2005-2009
- ICTAS I and II Planning/Design Committee, 2006-2009
- Food, Nutrition and Health University Cross-Cutting Initiative University Team, 2000-2003  
Appointed by provost, three-year term strives to bridge gap between several colleges within the University.
- Food Science and Technology, Department Chair Search Committee, 2000
- Usher at Graduation Commencements, 1999-2000

### Department Administration

- Chemistry Department Polymer Candidate Faculty Search, Committee Chair, 2016-2017
- Department Personnel Committee, 2016-present
- Graduate Education Committee, 2007-2012
- Department Highlands Seminar Committee, 2006-2010
- Graduate Recruiting Weekend, 2008-2010
- Nanoscience Search Committee Member 2012
- Nanoscience Faculty Planning Committee Member 2012
- Nanocamp instructor 2012

- School of Nanoscience Committee Member, 2008
- CRC Space Committee, 2008
- College of Science Cluster Hire Committee, (invited) 2005.
- ICTAS Space Committee, Committee Member, 2005.
- Department of Chemistry, Personnel Committee, 2005 (Elected position)
- MII Associate Director
- College of Science, Dean Search Committee
- Department Executive Committee, 2000-2001 (Elected position)
- Department Seminar Committee, 2001-present
- Department Graduate Education Committee, 2002-2005
- Department Recruiting Committee, 2000-present
- Department Organic Chemistry Committee, 2001-present
- Department Executive Committee, 2000-2001 (Elected position)
- Department of Chemistry, New Building Committee, 1999-2001  
Participated in development of polymer teaching laboratories
- Department of Chemistry, Recruiting Weekend Organizer, March 2000-2002  
Organized weekend for graduate student recruiting, including student mentors, social functions, faculty interviews, campus tours, lodging, and transportation
- Department Colloquium Committee, 2000-present  
Identify, invite, and host visiting scientists to the department.
- Department Admissions Committee, Polymer, 1999-present  
Responsible for accepting/declining all graduate student applications in the polymer field for the Department of Chemistry.
- Department Recruiting Committee, Polymer, 1999-present
- Organic Synthesis Faculty Search Committee 1999
- Physical Polymer Faculty Search Committee 1999
- Presentation at Oakridge-University Workshop, Georgia Tech, 1999
- Presentation to External Advisory Board, NSF Science and Technology Center, 1999
- Presented Recruiting Seminars at many US Universities and Colleges
- Hosted Invited Academic and Industrial Speakers (2x/year) 1999-2005
- Hosted Patent Attorney: Mitchell Katz, Atlanta Georgia, March, 2000.

## PROFESSIONAL AFFILIATIONS

- Member-at-Large for ACS PMSE Division
- Member of ACS Division of Organic Chemistry
- Member of ACS Division of Polymeric Materials: Science and Engineering
- Member of ACS Division of Polymer Chemistry
- Member of the American Association for the Advancement of Science (AAAS)
- Member of the American Chemical Society (ACS)

## CURRENT GROUP MEMBERS

Graduate Student	Degree/Major	Research Area	Graduation
Justin Serrine	Ph.D./MACR	Polyelectrolyte Complexes	09/2018
Ryan Mondschein	Ph.D./Chem	Biocompatible Polyesters	09/2018

Mingtao Chen	Ph.D./Chem	Ionic Polymerization of Charged Polymers	09/2018
Katherine Valentine	Ph.D./Chem	High Performance Engineering Thermoplastics	09/2019
Kevin Drummey	Ph.D./MACR	Hydrogen Bonding in Polymers	09/2019
Philip Scott	Ph.D./MACR	Additive Manufacturing	09/2020
Emily Wilts	Ph.D./SBES	TBD	09/2021
Tyler White	Ph.D./Chem	TBD	09/2021
Clay Arrington	Ph.D./MACR	TBD	09/2021
Xi Chen	Ph.D./MACR	TBD	09/2021

### FORMER GROUP MEMBERS

Graduate Student	Degree	Research Area	Post-Ph.D. Employment
Allison Pekkanen	Ph.D./SBES	Nanoparticle-cancer Cell Interactions and Folate Targeting	Booz-Allen-Hamilton
Joseph Dennis	Ph.D./MACR	Crystalline Polysulfones	IBM Almaden
Evan Margareta	Ph.D./Chem	Ionic Liquid Block Copolymer Membranes	Sun Chemicals
Alison Schultz	Ph.D./Chem	Phosphonium Polymers	Owens Corning
Keren Zhang	Ph.D./Chem	Nucleobase Polymers	Dow
Chainika Jangu	Ph.D./MACR	Gene Delivery	3M
Ashley Nelson	Ph.D./Chem	Polyesters	HRL
David Inglefield	Ph.D./Chem	Carbon Nanotubes	Eastman Chemical Company
Sean Hemp	Ph.D./Chem	Nucleobase Polymers	Michelin
Nancy Zhang	Ph.D./ Chem	DNA-Polymer Complexes	IBM Almaden Research Center
Daniel Buckwalter	Ph.D./ Chem	Siloxane Segmented Copolymers	Owens Corning
Michael Allen	Ph.D./ Chem	DNA-Polymer Complexes	Adhesives Research
Mana Tamami	Ph.D./ Chem	Reactive Sugars	Lubrizol
Tianyu Wu	Ph.D./ MACR	Charged Polymers	Bausch & Lomb
Steven June	Ph.D./ Chem	Synthesis of Biomacromolecules	3M
Renlong Gao	Ph.D./ Chem	Polyester Synthesis	PPG
Matthew Green	Ph.D./ ChemEng	Rheology of Biomacromolecules	Asst. Professor, Arizona State University
Shijing Cheng	Ph.D./ Chem	Living Polymerization	3M
Matthew Hunley	Ph.D./ MACR	Biodegradable/Biological Polymers	DuPont
Eveline van der Aa	M.S./ Chem	Biomedical Polymers	Laboratory Equipment Magazine
Matthew Cashion	Ph.D./ Chem	Phospholipid Coatings/Acrylics	
Rebecca Huyck	Ph.D./ MILES	Acrylic Block Copolymers	Asst. Professor, Transylvania University

Gozde Ozturk	Ph.D./ MACRO	Highly Branched Polyesters	Adhesives Research, Inc.
Andy Duncan	Ph.D./ MACRO	Polymers for Transducers	DuPont
Huaiying Kang	M.S.	Polyesters	MBA – Pamplin Business School
Philip Madison	M.S.	Cyclodextrin Mediation	Army Research Laboratories
Anthony J. Pasquale	Ph.D.	Novel Photoresists	Eastman Chemical Company
David Williamson	Ph.D.	Anionic Polymerization	DuPont
Jeremy Lizotte	Ph.D.	Stable Free Radical Polymerization	Eastman Chemical Company
Qin Lin	Ph. D.	Functional Polyesters	3M
Serkan Unal	Ph. D.	Triglycerides and Polyester Chemistry	Asst. Professor, Koc University, Istanbul, Turkey
Lars Kilian	Ph. D.	Photo-sensitive Polymers	Ashland Chemical
Scott Trenor	Ph. D.	Adhesives Synthesis	Milliken
Casey Elkins	Ph. D.	Living Polymerizations	DuPont
Matt McKee	Ph. D.	Processing-Structure Relationships	PPG
Ann Fornof	Ph.D.	Thin Film Coatings for Anti-Oxidation	3M
Afia Karikari	Ph.D.	Polymers for Medical Applications	Rohm and Haas
Kalpana Viswanathan	Ph.D.	Smart Surfaces	3M
Brian Mather	Ph.D.	Radical Polymerization	DuPont
Erika Borgerding	M.S.	Polyester Synthesis	Physician
Tomonori Saito	Ph.D.	Living Polymerization	Penn State
Sharlene Williams	Ph.D.	Reactive Sugars	DuPont
John Layman	Ph.D.	DNA-Polymer Complexes/Oxidation	Procter & Gamble

Scientist	Origin	Research Dates	Current Position
Prof. Youngtai Yoo	Seoul, Korea	01/2000-01/2001	Seoul, Korea
Dr. Zhenhe Wang	Los Angeles, CA – UCLA	05/2000-10/2001	ACS, Columbia
Dr. Koji Yamauchi	Toray, Japan	09/2000-09/2002	Toray Industries
Dr. Vladimir A. Sinani	Moscow, Russia	02/2001-05/2002	Sekisui Chemical
Dr. Ejembi Onah	Dresden, Germany	10/2001-10/2002	Cornell University
Dr. Taigyoo Park	Blacksburg, VA	11/2002-11/2004	Buffalo, NY
Dr. Cheryl Heisey	Blacksburg, VA	09/2002-02/2006	Kingsport, TN
Dr. Iskendor Yilgor	Turkey, Koc University	08/2003-06/2004	Koc University
Dr. Shad Mallakpour	Iran	08/2003-06/2004	Iran
Dr. Mary Dean Coleman	Blacksburg, VA	08/2004-06/2006	Appalachian State
Dr. Qin Lin	Blacksburg, VA	06/2006-06/2007	Brewer Science
Dr. Akshay Kokil	India	07/2006-12/2007	Leigh University
Dr. Bill Heath	Univ. Texas Austin	07/2006-07/2007	Sabco (formerly GE)



Dr. Funda Senyurt	Hattiesburg, MS	08/2006-06/2007	Johnson & Johnson
Dr. Takeo Suga	Japan	06/2007-06/2008	Waseda University
Dr. Sean Ramirez	Cornell University	11/2007-11/2009	Air Force
Dr. Eugene Joseph	DuPont	01/2008-01/2010	Virginia Tech
Dr. Philippe Bissel	VA Tech	03/2008-03/2010	Virginia Tech
Mr. Hideki Matsumoto	Tokyo, Japan	03/2008-03/2010	Toray Co.
Dr. Erin Murphy	UCLA	08/2009-08/2010	Kraton Polymers
Dr. Christian Schreiner	Germany	08/2009-08/2010	Univ. of Muenster
Dr. Kevin Miller	The Dow Chemical Co.	01/2010 -05/2010	Murray State
Mr. Daisuke Yamamoto	Nagoya, Japan	08/2010-06/2012	Toray Co.
Dr. Adam Smith	Univ. of Southern Mississippi	05/2011-06/2012	University of Mississippi
Dr. Asem Abdulahad	Rensselaer Polytechnic Institute	06/2012-08/2014	Jefferson College of Health Sciences
Dr. Makito Yoko	Nagoya, Japan	04/2013-04/2015	Toray Co.
Dr. Zhiyang Zhang	VA Tech	06/2013-12/2014	Virginia Tech
Dr. Sachin Bobade	University of Tennessee	01/2015-03/2016	Research Associate at EMD
Dr. Nicholas Moon	University of Minnesota	04/2015-03/2017	Milliken
Dr. Maruti Hedge	Delft University of Technology	08/2015-06/2017	Virginia Tech
Dr. Jana Herzberger	University of Mainz	05/2017-present	Virginia Tech

### PEER-REVIEWED PUBLICATIONS

- Dennis, J.M.; Fahs, G.B.; Moon, N.G.; Mondschein, R.J.; Moore, R.B.; Wilkes, G.L.; Long, T.E., Synthesis of Polysulfone-Containing Poly(butylene terephthalate) Segmented Block Copolymers: Influence of Segment Length on Thermomechanical Performance. *Macromolecules*, **2017**, in press. 10.1021/acs.macromol.7b00557
- Moon, N.G.; Pekkanen, A.M.; Long, T.E.; Showalter, T.N., Thiol-Michael 'Click' Hydrogels as an Imageable Packing Material for Cancer Therapy. *Polymer*, **2017**, in press.
- Mondschein, R.J.; Kanitkar, A.; Williams, C.B.; Verbridge, S.S.; Long, T.E., Polymer structure-property requirements for stereolithographic 3D printing of soft tissue engineering scaffolds. *Biomaterials*, **2017**, in press.
- Schultz, A.R.; Bobade, S.; Scott, P.J.; Long, T.E., Hydrocarbon-soluble Piperazine-containing Dilithium Anionic Initiator for High Cis-1,4 Isoprene Polymerization. *Macromolecular Chemistry and Physics*, **2017**, in review.
- Pekkanen, A. M.; Zawaski, C.; Stevenson Jr., A. T.; Dickerman, R.; Whittington, A. R.; Williams, C. B.; Long, T. E., Poly(ether ester) Ionomers as Water-Soluble Polymers for Material Extrusion Additive Manufacturing Processes. *ACS Applied Materials and Interfaces*, **2017**, 10.1021/acsaami.7b01777
- Yang, Y.; Chen, M.; Zou, S.; Yang, X.; Long, T. E.; He, Z., Efficient recovery of polyelectrolyte draw solutes in forward osmosis toward sustainable water treatment. *Desalination*, **2017**, in press.
- Moon, N.G.; Mondschein, R.; Long, T.E., Poly ( $\beta$ -thioesters) Containing Monodisperse Oxamide Hard Segments Using a Chemiselective Thiol-Michael Addition Reaction. *Polymer Chemistry* **2017**, 8, 2598-2608.

8. Grissom, T.G.; **Sirrine, J.M.; Long, T.E.**; Esker, A.R.; Morris, J.R., Interaction parameters for the uptake of sulfur mustard mimics into polyurethane films. *Progress in Organic Coatings* **2017**, 107, 14-17.
9. Schreiner, C.; Bridge, A.T.; Hunley, M.T.; Long, T.E.; Green, M.D., Segmented imidazolium ionenes: Solution rheology, thermomechanical properties, and electrospinning. *Polymer* **2017**, 114, 257-265.
10. Pekkanen, A.M.; Mondschein, R.J.; Guenette, D.; Mohaptra, N.; Long, T.E., Characterization of peptide coatings adhered to synthetic fibers: A versatile model for peptide nucleic acids. *International Journal of Adhesion and Adhesives* **2017**, 75, 17-22.
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12. Long, T.E., Reaction: Benign by Design Demands Innovation. *Chem* **2017**, 2(1), 7-8.
13. Schultz, A.R.; Chen, M.; Fahs, G.B.; Moore, R.B.; Long, T.E., Living anionic polymerization of 4-diphenylphosphino styrene for ABC triblock copolymers. *Polymer International* **2017**, 66 (1), 52-58
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15. Chartrain, N.A.; Vratsanos, M.; Han, D.T.; Sirrine, J.M.; Pekkanen, A.; Long, T.E.; Whittington, A.R.; Williams, C.B., Microstereolithography of tissue scaffolds using a biodegradable photocurable polyester. *Proceedings of the 27<sup>th</sup> Annual International Solid Freeform Fabrication Symposium* **2016**, 1732-1748.
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17. Zhang, K., Talley, S. J., Yu, Y. P., Moore, R. B., Murayama, M., Long, T. E., Influence of nucleobase stoichiometry on the self-assembly of ABC triblock copolymers. *Chemical communications*, **2016**, 52(48), 7564-7567.
18. Zhang, K.; Nelson, A. M.; Talley, S. J.; Chen, M.; Margareta, E.; Hudson, A. G.; Moore, R. B.; Long, T. E., Non-isocyanate poly(amide-hydroxyurethane)s from sustainable resources. *Green Chemistry* **2016**, 18, 4667-4681.
19. Jangu, C.; Schultz, A. R.; Wall, C. E.; Esker, A. R.; Long, T. E., Diphenylphosphino Styrene-Containing Homopolymers: Influence of Alkylation and Mobile Anions on Physical Properties. *Macromolecular Rapid Communications* **2016**, 37, 1212-1217.
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23. Margareta, E.; Fahs, G. B.; Inglefield, D. L.; Jangu, C.; Wang, D.; Heflin, J. R.; Moore, R. B.; Long, T. E., Imidazolium-Containing ABA Triblock Copolymers as Electroactive Devices. *ACS Applied Materials & Interfaces* **2016**, 8(2), 1280-1288.

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27. McDaniel D.K.; Jo A.; Ringel-Scaia V.M.; Coutermarsh-Ott S.; Rothschild D.E.; Powell M.; Zhang R.; Long T.E.; Oestreich K.; Riffle J.S., TIPS pentacene loaded PEO-PDLLA core-shell nanoparticles have similar cellular uptake dynamics in M1 and M2 macrophages and in corresponding in vivo microenvironments. *Nanomedicine: Nanotechnology, Biology and Medicine*. **2016**, 13(3), 1255-1266.
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33. Buckwalter, D. J.; Dennis, J. M; Long, T. E., Amide-containing segmented copolymer. *Progress in Polymer Science* **2015**, 45, 1-22.
34. Jangu, C.; Wang, J.-H. H.; Wang, D.; Fahs, G.; Heflin, J. R.; Moore, R. B.; Colby, R. H.; Long, T. E., Imidazole-containing triblock copolymers with synergy of ether and imidazolium sites. *Journal of Materials Chemistry C* **2015**, 3(16), 3891-3901.
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43. Jangu, C.; Wang, J.-H. H.; Wang, D.; Sharick, S.; Heflin, J. R.; Winey, K. I.; Colby, R. H.; Long, T. E., Well-Defined Imidazolium ABA Triblock Copolymers as Ionic-Liquid-Containing Electroactive Membranes. *Macromolecular Chemistry and Physics* **2014**, 215(13), 1319-1331.
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48. Abdulahad, A. I.; Jangu, C.; Hemp, S. T.; Long, T. E., Influence of Counterion on Thermal, Viscoelastic, and Ion Conductive Properties of Phosphonium Ionenenes. *Macromolecular Symposia* **2014**, 342(1), 56-66.
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58. Hemp, S.T.; Zhang, M.; Tamami, M.; Long, T. E., Phosphonium ionenes from well-defined step-growth polymerization: thermal and melt rheological properties. *Polymer Chemistry* **2013**, 4(12), 3582-3590.

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74. Allen, M. H.; Hemp, S. T.; Smith, A. E.; Long, T. E., Controlled Radical Polymerization of 4-Vinylimidazole. *Macromolecules* **2012**, 45(9), 3669-3676.
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Co-authored over 35 *confidential* technical reports at Eastman Kodak Company and Eastman Chemical Company.