TIMOTHY E. LONG, Ph.D.

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Prof. Long maintains a vigorous partnership with diverse national and international industries, academic institutions, and national laboratories. He has maintained a 15 to 20-member interdisciplinary research group and has been awarded ~ $50M in research funding over the past 20 years at Virginia Tech. His group's research goal integrates fundamental research in novel macromolecular structure and polymerization processes with the development of high performance macromolecules for advanced technologies, including additive manufacturing (3D printing), drug and gene delivery, sustainable feed stocks, adhesives and elastomers, block copolymers and living polymerization, and biomaterials for health and energy. Prof. Long has published more than 340 peer-reviewed publications and has obtained broad patent coverage on his research discoveries. Dr. Long has demonstrated a longstanding commitment to teaching and learning, from teaching at Virginia Tech and several International Universities, to short courses for industrial scientists, to webinars, news segments, and radio interviews to the general public.

PROFESSIONAL EXPERIENCE

2014-2019	**Director, Macromolecules Innovation Institute** (MII) 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 Outstanding Faculty Award of the Year, State of Higher Education for Virginia, 2020
- Outstanding Faculty Award Finalist, State of Higher Education for Virginia, 2018
- Awarded ACS-CEI Award for Incorporation of Sustainability into Chemical Education, 2019
- Received the Thermoplastic Elastomer Award from the ACS Rubber Division, 2018
- President of The Adhesion Society, 2018 - 2020
- Appointed the Editor in Chief of *Polymer International*, a Wiley Journal, 2018
- Received the John C. Schug Research Award from the Department of Chemistry, 2017
- Elected Vice President of the Adhesion Society, 2016
- Inducted as a AAAS Fellow, 2016
- 2015 Virginia 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 demonstrated 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
- 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, (American Chemical Society, General Secretary), 2000
- Sigma Xi, Professional Fraternity, 1999.
  Elected Full Member at VA Tech
- Faculty Signature Award, GenCorp Co. (OMNOVA), Akron, OH, 1999
- IUPAC Young Observer, 1999.
  Representing USA at IUPAC 1999 in Berlin, FRG. Sponsored by the National Research Council., which focused on macromolecular materials in the international chemical industry; Program development for improved public perception of Polymer Chemistry.
- Invited USA Industrial Speaker at the 5th Pacific Polymer Conference, Korea, 1997.
- National Technical Programming Co-chairperson, ACS Division of Polymer Chemistry, 1994-1997.

SIGNIFICANT RESEARCH FUNDING ACCOMPLISHMENTS (total funding exceeds $50M since 1999)

- 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)

MAJOR RESEARCH ACCOMPLISHMENTS

Virginia Tech, Department of Chemistry, 1998-Present

- National Cancer Institute - Inventor and Consultant for NCI R41/STTR Award - Self-expanding hydrogel for pelvic brachytherapy: a novel method for vaginal packing and customized radiation therapy (1R41CA203171-01A1), 2019.
- Invited as a research professor at Waseda University in Japan, 2018.
- Established international collaboration initiative with San Sebastian, Spain and corresponding student-exchange program with Dr. Haritz Sardon, 2016 – present
- Invited to Highlight Virginia Tech Research for PBS Show "Beyond Your Backyard: Montgomery County, VA" with Erik Hastings, Aired 4/17/2018.
- Invited Interview with Jim Metzner of Pulse of the Planet. Featured on NPR - Microplastics and their effect on the ocean and environment. Aired on 3/14-17/2017.
- Initiated the South East Polymer Forum, a seminar collaboration between Virginia Tech, Georgia Tech, UNC Chapel Hill, UTenn, University of Southern Mississippi, and Florida (joining in 2020), with Oak Ridge will serve as a key national lab partner.
- Acting Director of The Center for Performance Packaging Science (CP2S), established in 2016
- Co-PI of a 3-year NSF INFEWS: N/P/H2O: Materials Innovation At The Intersection Of Food-Energy-Water Systems (MII-FEWS)
- Co-Chair of the 2015 NSF Workshop -FEWS: Food-Energy-Water Systems Challenging Chemists in the 21st 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" featured in Chemical & Engineering News. November 19, 2014.
- Invited Perspective Article in Science, "Toward Recyclable Thermosets," 2014 (344), 706-707.
- Generated ~$50 million research funding during 1998-2019.
- 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
- From 1999 to 2019, over **340 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.
- 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

3M Company	Adhesives Research	Air Products
Align Technology	Allergan	Alltech Corp.
Argonaut Technologies	Army Research Laboratories	ASI Applied Systems
BASF (Germany)	Bayer Materials Science	Bostik-Findley Company
Boston Scientific	Brewer Science	Carlisle
Ciba Specialty Chemicals	Ciba Vision	Coca Cola Co.
Collano Industries (Switzerland)	Dow Chemical	Dow Corning
DSM	DuPont	Eastman Kodak Company
ExxonMobil	FXI	GenTech Optics
Gordon Research Conference	Henkel	IBM Almaden
IBM T.J. Watson Research Center	Invisalign Technologies (Mexico)	Kimberly Clark
Kraton Polymers	Lithium Division FMC	LORD Corporation
Michelin	NASA Langley	National Institute of Stds Tech
National Security Admin.	National Starch	National Tire Research Ctr.
Nike	Nolax	Northrop Grumman
Oak Ridge National Laboratory	Procter & Gamble	Reichhold Chemicals
RJ Reynonds	Rohm and Hass	SABIC
Shell Chemical Company	Solvay Corporation	Waters

Lectures Presented at Universities

Arizona State University	Bridgewater University	Caltech
Case Western Reserve University	Chiba University	Clark Atlanta University
Colorado School of Mines	Cornell University	Einhoven Technical University
Ferrum College	James Madison University	KAUST, Saudi Arabia
MPI of Colloids and Interfaces	Mt. Holyoke College	Northeastern University
Old Dominion University	Osaka University, Japan	Penn State University
Pittsburg State University	Rensselaer Polytechnic Inst.	Research Center – Arlington VA, Virginia Tech
Rochester Inst. of Tech.	Rutgers University	Shanghai Jiaotong University
Soochow University	St. Bonaventure University	Tongji University
Tulane University	University of Akron	University of Alabama
University of CA at Irvine	University of Cincinnati	University of Connecticut
University of Delaware	University of Dresden, Germany	University of Georgia
University of Hamburg, Germany	University of Illinois	University of Mainz, Germany
University of Massachusetts	University of Minnesota	University of North Carolina
University of Rochester	University of South Carolina	University of Southern Mississippi
University of Strasbourg, France	University of Tennessee	University of Warwick
University of Washington	Virginia Commonwealth Univ.	Virginia Tech
Waseda University, Japan	Wooster Polytechnic Institute	Zhejiang University

TEACHING EXPERIENCE

Virginia Tech

Fall 1999 – Spring 2020

Course	**Number**	**Credits – Students**
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
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
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/BMV S 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).

Extension Short Courses and Seminars 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.
- Polymer Short Courses, offered three to four times per year, team-taught at Industrial Locations.

SCIENTIFIC COMMUNITY SERVICE

Proposal and Panel Review

- Invited, NSF Panel Review, Chemistry Division, 2019.
- Invited, Petroleum Research Fund (PRF) Board, American Chemical Society Proposal Reviewer, 2012-2018, 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 45-60 manuscripts annually for the following journals:

- Macromolecules
- Journal of Polymer Science: Part A Chemistry
- Polymer International
- Polymer Engineering and Science, Publisher – Society of Plastic Engineers
- Journal of American Chemical Society,
- Science
- Polymer
- ACS Macro Letters
- Advanced Materials
- Advanced Functional Materials
- Journal of Materials Science
- Materials Letters
- Journal of Adhesion
- Langmuir
- Macromolecular Chemistry and Physics
- Macromolecular Rapid Communications
- Biomacromolecules
- Macromolecular Bioscience

- Green Chemistry
- Progress in Organic Coatings
- Journal of Mechanical Engineering Science
- Bioconjugate Chemistry
- Polymer Chemistry
- European Polymer Journal
- Journal Organic Chemistry
- Journal of Tissue Engineering
- Journal of Applied Polymer 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

- Stakeholder for the Solar Decathlon Dubai Project (College of Architecture) 2017-Present
- 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, 2016-2019

- 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 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
Philip Scott	Ph.D./MACR	Additive Manufacturing	06/2020
Xi Chen	Ph.D./MACR	Acrylic Block Copolymers	06/2020
Emily Wilts	Ph.D./MACR	Bio-compatible polymers	09/2020
Tyler White	Ph.D./Chem	Water-soluble polyureas	11/2020
Clay Arrington	Ph.D./CHEM	Thermoplastics for Stereolithography	11/2020
Josh Wolfgang	Ph.D./CHEM	Engineering Thermoplastics	11/2020
Chris Kaszprzak	Ph.D./MACR	Ion-containing Polymers	09/2022
Ben Stovall	M.S./Chem	Sulfonated Fully-Aromatic Polymers	10/2020
Cody Weyrich	Ph.D./Chem	Polyester structure and liquid crystalline properties	09/2022
James Brown	Ph.D./MACR	Stimuli-responsive bio-compatible polymers	09/2022
Jose Sintas	Ph.D./ Chem	Polyurethanes for Biostents	09/2023
Boer Lu	Ph.D./Chem	Non-covalent bonding containing polymers	09/2022
Johanna Vandenbrande	Ph.D./Chem	Additive Manufacturing of Polyimides	09/2022
Jianheng Wen	Ph.D./ Chem	Additive Manufacturing	09/2023
Ren Bean	Ph.D./ Chem	Latex Polymer Systems	09/2023

FORMER GROUP MEMBERS

Graduate Student	Degree	Research Area	Post-Ph.D. Employment
Mark Cashman	M.S./ MACR	Additive Manufacturing of Polysiloxanes	Virginia Tech Ph.D.
Ryan Mondschein	Ph.D./Chem	Biocompatible Polyesters	Solvay
Katherine V. Heifferon	Ph.D./Chem	High Performance Engineering Thermoplastics	DuPont
Mingtao Chen	Ph.D./Chem	Ionic Polymerization of Charged Polymers	Post. Doc. UCSB
Justin Sirrine	Ph.D./MACR	Photocurable Oligomers	Solvay
Kevin Drummey	M.S./MACR	Hydrogen Bonding in Polymers	HRL
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 Margaretta	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	Sabic (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
Dr. Takahiro Komamura	Tokyo Tech	06/2019-08/2020	Tokyo Tech

INVITED KEYNOTE DIGITAL PRESENTATIONS and NEWS (Recent)

- WSLS 10 News (CBS) (July 2019) - Self-expanding hydrogel for pelvic brachytherapy: a novel method for customized radiation therapy

- PBS Show "Beyond Your Backyard: Montgomery County, VA" with Erik Hastings, Aired 4/17/2018.
  https://www.pbs.org/video/beyond-your-backyard-montgomery-county-va-h6lqp8/

- Pulse of the Planet. Featured on NPR 3/2017
  Microplastics - Into Our Oceans:
  https://www.pulseplanet.com/dailyprogram/dailies.php?POP=6532
  Microplastics - Solutions:
  https://www.pulseplanet.com/dailyprogram/dailies.php?POP=6533
  Microplastics - Beneficial Uses:
  https://www.pulseplanet.com/dailyprogram/dailies.php?POP=6534
  Microplastics - Double-Edged Sword:
  https://www.pulseplanet.com/dailyprogram/dailies.php?POP=6535

- Virginia Public Radio, New Material Invented for High Performance 3D Printing, 9/6/2017
  http://www.wvtf.org/post/new-material-invented-hi-performance-3-d-printing-0

- Design News, 3D-Printed High-Performance Polymer Could be Used in Space, 9/26/2017
  https://www.designnews.com/materials-assembly/3d-printed-high-performance-polymer-could-be-used-space/212410168757537

- TECH Briefs, Researchers Print the Unprintable: Kapton, 9/28/2017
  https://www.techbriefs.com/component/content/article/1198-tb/news/news/27471-researchers-print-the-unprintable-kapton?Itemid=690

PEER-REVIEWED PUBLICATIONS

1. Scott, P. J.; Meenakshisundaram, V.; Chartrain, N. A.; Sirrine, J. M.; Williams, C. B.; Long, T. E., Additive Manufacturing of Hydrocarbon Elastomers via Simultaneous Chain Extension and Crosslinking of Hydrogenated Polybutadiene Oligomers. *In Progress.*
2. Dennis, J. M.; Mondschein, R. J.; Wolfgang, J. D.; Hegde, M.; Odle, R.; Long, T. E., Synthesis and Characterization of Long-Chain Branched Poly(ether imide)s with A(3) Comonomers. *Acs Applied Polymer Materials* **2020,** *2* (2), 958-965.
3. Cao, K.; Stovall, B. J.; Arrington, C. B.; Xu, Z.; Long, T. E.; Odle, R. R.; Liu, G. L., Facile Preparation of Halogen-Free Poly(ether imide) Containing Phosphonium and Sulfonate Groups. *Acs Applied Polymer Materials* **2020,** *2* (1), 66-73.
4. Cao, K.; Serrano, J. M.; Liu, T. Y.; Stovall, B. J.; Xu, Z.; Arrington, C. B.; Long, T. E.; Odle, R. R.; Liu, G. L., Impact of metal cations on the thermal, mechanical, and rheological properties of telechelic sulfonated polyetherimides. *Polymer Chemistry* **2020,** *11* (2), 393-400.

5. Zhang, K.; Fahs, G. B.; Margaretta, E.; Hudson, A. G.; Moore, R. B.; Long, T. E., Acetyl-protected cytosine and guanine containing acrylics as supramolecular adhesives. *Journal of Adhesion* **2019,** *95* (2), 146-167.
6. Zawaski, C. E.; Wilts, E. M.; Chatham, C. A.; Stevenson, A. T.; Pekkanen, A. M.; Li, C.; Tian, Z. T.; Whittington, A. R.; Long, T. E.; Williams, C. B., Tuning the material properties of a water-soluble ionic polymer using different counterions for material extrusion additive manufacturing. *Polymer* **2019,** *176*, 283-292.
7. Wilts, E. M.; Pekkanen, A. M.; White, B. T.; Meenakshisundaram, V.; Aduba, D. C.; Williams, C. B.; Long, T. E., Vat photopolymerization of charged monomers: 3D printing with supramolecular interactions. *Polymer Chemistry* **2019,** *10* (12), 1442-1451.
8. Wilts, E. M.; Ma, D.; Bai, Y.; Williams, C. B.; Long, T. E., Comparison of Linear and 4-Arm Star Poly(vinyl pyrrolidone) for Aqueous Binder Jetting Additive Manufacturing of Personalized Dosage Tablets. *ACS Applied Materials & Interfaces* **2019,** *11* (27), 23938-23947.
9. White, B. T.; Long, T. E., Advances in Polymeric Materials for Electromechanical Devices. *Macromolecular Rapid Communications* **2019,** *40* (1).
10. Sirrine, J. M.; Zlatanic, A.; Meenakshisundaram, V.; Messman, J. M.; Williams, C. B.; Dvornic, P. R.; Long, T. E., 3D Printing Amorphous Polysiloxane Terpolymers via Vat Photopolymerization. *Macromolecular Chemistry and Physics* **2019,** *220* (4).
11. Scott, P. J.; Meenakshisundaram, V.; Chartrain, N. A.; Sirrine, J. M.; Williams, C. B.; Long, T. E., Additive Manufacturing of Hydrocarbon Elastomers via Simultaneous Chain Extension and Cross-linking of Hydrogenated Polybutadiene. *ACS Applied Polymer Materials* **2019,** *1* (4), 684-690.
12. Mondschein, R. J.; Dennis, J. M.; Liu, H. Y.; Ramakrishnan, R. K.; Sirrine, J. M.; Weiseman, T.; Colby, R. H.; Nazarenko, S.; Turner, S. R.; Long, T. E., Influence of Bibenzoate Regioisomers on Cyclohexanedimethanol-Based (Co)polyester Structure-Property Relationships. *Macromolecules* **2019,** *52* (3), 835-843.
13. Mapesa, E. U.; Chen, M. T.; Heres, M. F.; Harris, M. A.; Kinsey, T.; Wang, Y. Y.; Long, T. E.; Lokitz, B. S.; Sangoro, J. R., Charge Transport in Imidazolium-Based Homo- and Triblock Poly(ionic liquid)s. *Macromolecules* **2019,** *52* (2), 620-628.
14. Ju, L.; Dennis, J. M.; Heifferon, K. V.; Long, T. E.; Moore, R. B., Compatibilization of Polyester/Polyamide Blends with a Phosphonated Poly(ethylene terephthalate) Ionomer: Comparison of Monovalent and Divalent Pendant Ions. *ACS Applied Polymer Materials* **2019,** *1* (5), 1071-1080.
15. Herzberger, J.; Sirrine, J. M.; Williams, C. B.; Long, T. E., Polymer Design for 3D Printing Elastomers: Recent Advances in Structure, Properties, and Printing. *Progress in Polymer Science* **2019,** *97*.
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18. Heifferon, K. V.; Long, T. E., Advanced Polymers for Reduced Energy Consumption in Architecture. *Macromolecular Rapid Communications* **2019,** *40* (3).
19. Edling, H. E.; Mondschein, R. J.; Davis, M. K.; Long, T. E.; Turner, S. R., Amorphous copolyesters based on bibenzoic acids and neopentyl glycol. *Journal of Polymer Science Part a-Polymer Chemistry* **2019,** *57* (5), 579-587.
20. Chen, X.; Zhang, K. R.; Talley, S. J.; Orsino, C. M.; Moore, R. B.; Long, T. E., Quadruple hydrogen bonding containing supramolecular thermoplastic elastomers: Mechanical and morphological correlations. *Journal of Polymer Science Part a-Polymer Chemistry* **2019,** *57* (1), 13-23.
21. Chen, X.; Talley, S. J.; Haag, J. V.; Spiering, G. A.; Liu, B.; Drummey, K. J.; Murayama, M.; Moore, R. B.; Long, T. E., Doubly Charged ABA Triblock Copolymers: Thermomechanically Robust Physical Network and Hierarchical Microstructures. *Macromolecules* **2019,** *52* (23), 9168-9176.
22. Chatham, C. A.; Zawaski, C. E.; Bobbitt, D. C.; Moore, R. B.; Long, T. E.; Williams, C. B., Semi-Crystalline Polymer Blends for Material Extrusion Additive Manufacturing Printability: A Case Study with Poly(ethylene terephthalate) and Polypropylene. *Macromolecular Materials and Engineering* **2019,** *304* (5).
23. Chatham, C. A.; Long, T. E.; Williams, C. B., A review of the process physics and material screening methods for polymer powder bed fusion additive manufacturing. *Progress in Polymer Science* **2019,** *93*, 68-95.
24. Chatham, C. A.; Long, T. E.; Williams, C. B., Powder bed fusion of poly(phenylene sulfide) at bed temperatures significantly below melting. *Additive Manufacturing* **2019,** *28*, 506-516.
25. Cao, K.; Guo, Y. C.; Zhang, M. X.; Arrington, C. B.; Long, T. E.; Odle, R. R.; Liu, G. L., Mechanically Strong, Thermally Stable, and Flame Retardant Poly(ether imide) Terminated with Phosphonium Bromide. *Macromolecules* **2019,** *52* (19), 7361-7368.
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Study with Poly(ethylene terephthalate) and Polypropylene. *Macromolecular Materials and Engineering* **2019,** *304* (5).

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38. Mondschein, R. J.; Dennis, J. M.; Liu, H. Y.; Ramakrishnan, R. K.; Sirrine, J. M.; Weiseman, T.; Colby, R. H.; Nazarenko, S.; Turner, S. R.; Long, T. E., Influence of Bibenzoate Regioisomers on Cyclohexanedimethanol-Based (Co)polyester Structure-Property Relationships. *Macromolecules* **2019,** *52* (3), 835-843.
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42. Zhang, K.; Fahs, G. B.; Margaretta, E.; Hudson, A. G.; Moore, R. B.; Long, T. E., Acetyl-protected cytosine and guanine containing acrylics as supramolecular adhesives. *Journal of Adhesion* **2019,** *95* (2), 146-167.
43. Aduba, D. C.; Zhang, K. R.; Kanitkar, A.; Sirrine, J. M.; Verbridge, S. S.; Long, T. E., Electrospinning of plant oil-based, non-isocyanate polyurethanes for biomedical applications. *Journal of Applied Polymer Science* **2018,** *135* (29).
44. Arrington, K. J.; Radzinski, S. C.; Drummey, K. J.; Long, T. E.; Matson, J. B., Reversibly Cross-linkable Bottlebrush Polymers as Pressure-Sensitive Adhesives. *Acs Applied Materials & Interfaces* **2018,** *10* (31), 26662-26668.
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52. Long, T. E.; Williams, C. B., Printing nanomaterials in shrinking gels Photopatterning of reactive sites in gels enables arbitrary patterning of nanoparticles. *Science* **2018,** *362* (6420), 1244-1245.
53. Long, T. E.; Williams, C. B.; Bortner, M. J., Introduction for polymer special issue: Advanced polymers for 3D printing/additive manufacturing. *Polymer* **2018,** *152*, 2-3.
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