

Joseph G. Lawrence, PhD

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A. Professional Preparation

Annamalai University, India	Chemical Engineering	B.E., 1997
University of Toledo, Toledo, OH	Chemical Engineering	M.S., 2002
University of Toledo, Toledo, OH	Engineering (Chemical)	Ph.D., 2008
University of Toledo, Toledo, OH	Biomaterials & Tissue Engineering	Post-doctoral, 2008-09

B. Appointments

2015-Present	Research Professor & Director, CMSC & Polymer Institute, University of Toledo, Ohio
2014-2015	Director, CMSC and Associate Director, Polymer Institute, University of Toledo, Ohio
2011-2013	Interim Director, CMSC, College of Engineering, University of Toledo, Ohio
2008-2010	Instrumentation Analyst, CMSC, College of Engineering, University of Toledo, Ohio
2003-2008	Graduate Research Assistant, Department of Chemical Engineering, University of Toledo, Ohio
2000-2003	Graduate Research Assistant, Department of Chemical Engineering, University of Toledo, Ohio
1998-2000	Production Engineer, Hindustan Unilever Limited, India
1997-1998	Process Engineer, Protchem Industries India Ltd., India

C. Products

(i) *Relevant products*

1. Joshi, A.; Lawrence, J.G.; Coleman, M.R., Effect of Biaxial Orientation on Microstructure and Properties of Renewable Copolyesters of Poly(ethylene terephthalate) with 2,5-Furandicarboxylic Acid for Packaging Application. ACS Appl. Polym. Mater. 2019, doi.org/10.1021/acsapm.9b00330
2. Joshi, A.; Alipourasiabi, N.; Kim, Y.W.; Coleman, M.; Lawrence, J. Role of Enhanced Solubility in Esterification of 2,5 Furandicarboxylic Acid with Ethylene Glycol at Reduced Temperatures: Energy Efficient Synthesis of Poly(ethylene 2,5 Furan dicarboxylic acid), *Reaction Chemistry and Engineering* 2018, 3 (447).
3. Yu, X.; Sreenivasan, S.; Tian, K.; Zheng, T.; Lawrence, J.; Pilla, S., Sustainable, Animal Protein-Intermeshed Epoxy Hybrid Polymers: From Conquering Challenges to Engineering Properties. ACS Omega 2018, 3 (10), 14361-14370.
4. Pradeep, S. A.; Kharbas, H.; Turng, L. S.; Avalos, A.; Lawrence, J. G.; Pilla, S., Investigation of Thermal and Thermomechanical Properties of Biodegradable PLA/PBSA Composites Processed via Supercritical Fluid-Assisted Foam Injection Molding. *Polymers-Basel* 2017, 9 (1).
5. Zhou, H.; Lawrence, J. G.; Bhaduri, S. B., Fabrication aspects of PLA-CaP/PLGA-CaP composites for orthopedic applications: a review. *Acta Biomater* 2012, 8 (6), 1999-2016.

(ii) Other Significant Products

1. Zhou, H.; Lawrence, J. G.; Touny, A. H.; Bhaduri, S. B., Biomimetic coating of bisphosphonate incorporated CDHA on Ti6Al4V. *J Mater Sci Mater Med* 2012, 23 (2), 365-74.
2. Touny, A. H.; Lawrence, J. G.; Jones, A. D.; Bhaduri, S. B., Effect of electrospinning parameters on the characterization of PLA/HNT nanocomposite fibers. *J Mater Res* 2010, 25 (5), 857-865.
3. Wagner, D.; Lawrence, J.; Bhaduri, S., Microwave synthesis of calcium phosphate nanowhiskers as nonviral, inorganic gene delivery vectors. *Human Gene Therapy* 2009, 20(11), 1518-1519.
4. Wagner, D. E.; Lawrence, J.; Bhaduri, S. B., Microwave-assisted solution combustion synthesis of high aspect ratio calcium phosphate nanoparticles. *J Mater Res* 2013, 28 (22), 3119-3129.
5. Lawrence, J. G.; Berhan, L. M.; Nadarajah, A., Structural transformation of vapor grown carbon nanofibers studied by HRTEM. *J Nanopart Res* 2008, 10 (7), 1155-1167.

D. Synergistic Activities

1. Direct the Polymer Institute and the Polyesters and Barrier Materials Research Consortium at the University of Toledo. Served as lead investigator on various industry sponsored projects on topic areas including but not limited to renewably sourced polymers, processing & additive manufacturing, barrier improvement of packaging polymers and recycling of polyesters.
2. Principal investigator on numerous projects totaling over \$3M in funding from state agencies and industry
3. Developed the Center for Materials and Sensor Characterization (CMSC) at the College of Engineering, University of Toledo. Within 3 years of the establishment of CMSC, transformed the Center from a paper blueprint into a thriving interdisciplinary research instrumentation facility. Established a vibrant partnership with industries locally and nationally and grew the number of industry collaborators to >60 in the past 10 years
4. Trained graduate students and undergraduate students on Electron Microscopy techniques for Nanotechnology and Materials research (trained over 150 students in the past 5 years). Demonstrated Electron Microscopy to high school and middle school students on several occasions. Conducted training programs on advanced materials characterization techniques.
5. Technical Reviewer for the following journals: *Materials*, *Nanoscale Research Letters*, *Applied Physics A-Materials Science & Engineering*, *Polymer Composites*, *ASME International* and *SAE World Congress: Biocomposites: Processing, Characterization & Modeling*. Currently, serving on the board of directors of the Society of Plastics Engineers (SPE), injection molding division and as faculty advisor for SPE student chapter at the University of Toledo.
6. Hired, mentored and trained 3 permanent PhD staff scientists and 3 research faculty. Advised/advising 4 PhD students, 8 MS students and 5 undergraduate students. Served on >10 graduate student dissertation/thesis committees.
7. Established the Drinking Water Research Laboratory at the University of Toledo as a community facility available to local utilities to analyze water samples for harmful chemicals. Assisted high school students with science fair projects related to water purification.