Adam J. Kramschuster

Associate Professor and Program Director
Plastics Engineering
Department of Engineering and Technology
University of Wisconsin – Stout

Education

- **Doctor of Philosophy, Mechanical Engineering**, University of Wisconsin-Madison
  Madison, WI, June 2008
- **Master of Science, Mechanical Engineering**, University of Wisconsin-Madison
  Madison, WI, September 2005
- **Bachelor of Science, Manufacturing Engineering**, University of Wisconsin-Stout
  Menomonie, WI, December 2001

Professional Experience

Associate Professor and Program Director, Plastics Engineering, Department of Engineering and Technology, University of Wisconsin-Stout, Menomonie, WI
August 2008-present

- Develop curriculum for new Plastics Engineering program to achieve ABET Accreditation and service the plastics industry with highly skilled Plastics Engineers.
- Draft proposals and coordinate with the plastics industry to develop a world-class undergraduate plastics processing and testing lab.
- Mentor Plastics Engineering students in the lab as they develop critical thinking skills and become proficient at process setup, optimization, and troubleshooting.

Research Assistant, Polymer Engineering Center, Department of Mechanical Engineering, University of Wisconsin-Madison, Madison, WI
January 2004-July 2008

- Specified hardware and developed custom data acquisition system using LabVIEW for monitoring the microcellular injection molding process.
- Extensive use of design of experiments (DOE) to identify parameters affecting the shrinkage and warpage in microcellular injection molding and microcellular co-injection molding.
- Perform compounding and conventional and microcellular injection molding experiments of biodegradable polymers, as well as biodegradable polymer composites and nanocomposites.
- Developed a novel method for the mass production of highly porous and interconnected biodegradable polymer matrices that have the potential to act as tissue engineering scaffolds or drug delivery matrices (patent application P07200US).

Plastics Consulting Engineer, The Madison Group, Madison, WI
January 2007-July 2008

- Provide detailed failure analysis reports for a variety of plastic components and assemblies.
- Reports are supported by data from scanning electron microscopy, Fourier transform infrared spectroscopy, and mechanical testing.

Development Engineer, Technology Center, Phillips Plastics Corporation, Prescott, WI
January 2002-December 2003

- Functioned in corporate engineering support role, serving nine manufacturing facilities.
- Developed custom data acquisition system for high-speed magnesium injection molding equipment.
- Member of R&D project that involved the development of a process for extruding magnesium alloy in its semi-solid state (Patent #20060070419). This project resulted in successfully producing a consistently uniform (size and microstructure) feedstock to be used in Thixomolding®.
- Served as a project engineer in the medical device industry, specifying tooling changes to accommodate the customer and validating processes for all 25 parts of the medical device assembly I was assigned to.

Laboratory and Instrumentation Skills

Advanced knowledge of injection molding and process troubleshooting
Broad knowledge of plastics processing
Extensive use of LabVIEW for custom data acquisition
Rheological analysis (melt flow index, rotational rheometry)
Thermal analysis (differential scanning calorimetry, thermogravimetric analysis)
Fourier transform infrared spectroscopy
Mechanical testing of polymers
Scanning electron microscopy

Professional Societies

Society of Plastics Engineers (2003-present)
  Member of Injection Molding Division Board of Directors (2008-present)
  Communications Chair of Injection Molding Division Board of Directors (2009-present)
  Injection Molding Division Technical Program Chair for ANTEC 2014
  Member of Next Generation Advisory Board of Directors (2010-present)
American Society for Engineering Education (2010-present)

Honors and Awards

- Recipient of the Chester E. and Flora Jane LeRoy Fellowship, April 2005.
- Guest speaker at the American Society for Quality – Madison Section meeting in November 2006.
- President – Society of Plastics Engineering Student Chapter at UW-Madison (2005-2008)
    - Student chapter received STRETCH award in 2005 (STudents Reaching Excellence Through CHapters)
    - Student chapter received the Outstanding Student Chapter award in 2007 and 2008.
- Recipient of UW-Stout G.A. Taft Manufacturing Engineering Professorship in 2010 (three year award).
- Recipient of Outstanding Teaching Award at UW-Stout, August 2011.
- Recipient of Outstanding Partner from School of Education, UW-Stout, May 2012.

Conference Presentations and Publications

- **Kramschuster, A.**, Cavitt, R., Ermer, D., Chen, Z., & Turng, L-S., "Warpage Comparison Between Microcellular and Conventional Injection Molding," presented at ANTEC, May 1-5, 2005, Boston, MA.
- **Kramschuster, A.**, Cavitt, R., Ermer, D., Shen, C., Chen, Z., & Turng, L-S., "Quantitative Study of Shrinkage and Warpage Behavior for Microcellular and Conventional Injection Molding," presented at ASME Materials Division 2005, November 5-11, 2005, Orlando, FL.
- **Kramschuster, A.**, Pilla, S., Gong, S., Chandra, A., and Turng, L-S., "Injection-Molded Solid and Microcellular Polylactide Compounded with Recycled Paper Shopping Bag Fibers", presented at the 9th Annual Wood & Biofiber Plastic Composites Conference, May 21-23, Madison, WI.
- **Kramschuster, A.** and Turng, L-S., "Injection Molding of Highly Porous Biodegradable Foams for Tissue Engineering Scaffolds", presented at Biofoams 2007, September 26-28, Capri, Italy.
- **Kramschuster, A.**, "Injection Molding of Highly Porous and Interconnected Biodegradable Polymer Matrices", invited speaker at Milwaukee SPE Section Meeting, January 15, 2008, Madison, WI.
- **Kramschuster, A.** and Turng, L-S., "Injection-Molded Polymer Scaffold Foams", presented at ANTEC, May 4-8, 2008, Milwaukee, WI.
- **Kramschuster, A.**, "Development of a Microcellular Injection Molding Process for Biodegradable Tissue Engineering Scaffolds", invited speaker at Milwaukee SPE MiniTec, October 21, 2008, Milwaukee, WI.
- **Kramschuster, A.**, "Injection Molding Process for Manufacturing Highly Porous and Interconnected Biodegradable Polymer Matrices for Use as Tissue Engineering Scaffolds", invited speaker at Rheology Research Seminar, December 5, 2008, Madison, WI.
- **Kramschuster, A.**, "An Injection Molding Process for Biodegradable Polymer Matrices with a Potential Use as Tissue Engineering Scaffolds", invited speaker at the Medical Design and Manufacturing West Conference, February 9-12, 2009, Anaheim, CA.
- **Kramschuster, A. and Turng, L.S.,** "Microcellular Injection Molding of Highly Porous and Interconnected Biodegradable Polylactide/Hydroxyapatite Composite Foams", Biofoams 2009, September 26-28, 2009 Niagara Falls, Canada.
- **Kramschuster, A.**, "Plastics Engineering Program at UW-Stout," invited speaker at 10th Annual International Polymer Colloquium," May 28, 2010, Madison, WI.
- **Kramschuster, A., Turng, L.S., Wi, W.J., Peng, Y.Y., and Peng, J.**, "The Effect of Nano Hydroxyapatite Particles on Morphology and Mechanical Properties of Microcellular Injection Molded Polylactide/Hydroxyapatite Tissue Scaffold", ASME 2010 First Global Congress on NanoEngineering for Medicine and Biology, NEMB2010, February 7-10, 2010, Houston, TX.
- Ralston, B. E., Donthu, S., Ledwith, P., **Kramschuster, A.**, and McNulty, J., "Environmental Stress Cracking of Polycarbonates Exposed to Sunscreen and Hand Lotion," ANTEC, April 1-5, 2012, Orlando, FL.
- **Kramschuster, A.** and Slupe, G., "A Collaborative, Cross-Disciplinary Project between Engineering Courses and Programs Centered on Design for Manufacturability," ASEE North Midwest Section Conference, October 17-18, 2013, Fargo, ND.

- Burman, D., **Kramschuster, A.**, and Wissmiller, D., "Integration of Thermal and Fluid Sciences in the Undergraduate Plastics Engineering Program at the University of Wisconsin-Stout," accepted for publication at SPE ANTEC 2014, Las Vegas, NV.

Peer-Reviewed Publications

- **Kramschuster, A.**, Cavitt, R., Ermer, D., Chen, Z., and Turng, L-S., "Quantitative Study of Shrinkage and Warpage Behavior for Microcellular and Conventional Injection Molding," Polymer Engineering & Science, 45 (10) 1408-1418 (2005).
- **Kramschuster, A.**, Cavitt, R., Shen, C., Ermer, D., and Turng, L-S., "Quantitative Study of the Dimensional Stability of Injection Molded Parts Using Conventional and Microcellular Injection Molding and Microcellular Co-Injection Molding," Journal of Plastics Technology (2006), http://www.kunststoffe.de/directlink.asp?WAK060103.
- Shen, C., **Kramschuster, A.**, Ermer, D., and Turng, L-S., "Study of Shrinkage and Warpage in Microcellular Co-Injection Molding," International Polymer Processing, 21 (4) 393-401 (2006).
- **Kramschuster, A.**, Cavitt, R., Ermer, D., Chen, Z., and Turng, L-S., "Effect of Processing Conditions on Shrinkage and Warpage and Morphology of Injection Moulded Parts Using Microcellular Injection Molding," Plastics, Rubber and Composites, 35 (5) 198-209 (2006).
- Zhou, J., Turng, L-S., and **Kramschuster, A.**, "Single and Multi Objective Optimization for Injection Molding Using Numerical Simulation with Surrogate Models and Genetic Algorithms," International Polymer Processing, 21 (5) 509-520 (2006).
- **Kramschuster, A.**, Gong, S., Turng, L-S., Li, Tao, Li, T., "Injection-Molded Solid and Microcellular Polylactide and Polylactide Nanocomposites," Journal of Biobased Materials and Bioenergy, **1**(1), 37-47 (2007).
- **Kramschuster, A.**, Pilla, S., Gong, S., Chandra, A., and Turng, L-S., "Injection-Molded Solid and Microcellular Polylactide Compounded with Recycled Paper Shopping Bag Fibers", International Polymer Processing, **22**(5), 436-445 (2007).
- Pilla, S., **Kramschuster, A.**, Gong, S., Chandra, A., and Turng, L-S., "Solid and Microcellular Polylactide-Carbon Nanotube Nanocomposites", International Polymer Processing, **22**(5), 418-428 (2007).
- Pilla, S., **Kramschuster, A.**, Yang, L., Lee, J., Gong, S., and Turng, L-S., "Microcellular Injection Molding of Polylactide with Chain Extender", Materials Science and Engineering: C, **29**(4), 1258-1265 (2009).
- Pilla, S., **Kramschuster, A.**, Lee, J., Auer, G., Gong, S., and Turng, L-S., "Microcellular and Solid Polylactide-Flax Fiber Composites", Composite Interfaces, **16**(7-9), 869-890 (2009).
- Martinez, K., Li, H., Turng, L-S., **Kramschuster, A.**, and Lee, J., "Effects of Nucleating and Clarifying Agents on the Morphology and Mechanical Properties of Microcellular Injection Molded Polypropylene Parts", International Journal of Polymers and Technologies, January-April (2009).
- **Kramschuster, A.** and Turng, L-S., "An Injection Molding Process for Manufacturing Highly Porous and Interconnected Biodegradable Polymer Matrices for Use as Tissue Engineering Scaffolds", Journal of Biomedical Materials Research: Part B – Applied Biomaterials, **92B**(2), 366-376 (2010).

- Javadi, A., **Kramschuster, A.**, Pilla, S., Lee, J., Gong, S., and Turng, L-S., "Processing and Characterization of Microcellular PHBV/PBAT Blends", Polymer Engineering & Science, **50**(7), 1400-1448 (2010).
- Lee, J., **Kramschuster, A.**, and Turng, L-S., "Microcellular Injection Molding of Low-Density Polyethylene (LDPE) Composites", Polymer-Plastics Technology and Engineering, **49**(13), 1339-1346 (2010).
- **Kramschuster, A.** and Turng, L-S., "Fabrication of Tissue Engineering Scaffolds", Chapter 17 in Handbook of Biopolymers and Biodegradable Plastics, 427-446, Elsevier (2013).