

Adam Kramschuster, Ph.D.

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Education

- **Doctor of Philosophy, Mechanical Engineering, Biomedical Engineering Minor**
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

University of Wisconsin – Stout (Menomonie, WI)

Professor: Plastics Engineering, Department of Engineering and Technology
August 2017 – present

- Mentor students in the classroom and laboratory as they develop critical thinking skills
- Perform multiple materials testing and processing studies as requested by industry in partnership with the UW – Stout Discovery Center
- Lead hands-on, applied learning projects in the classroom involving design for manufacturability in the areas of plastic part design, mold design, mold machining, and processing
- Rated as an outstanding or very good instructor by over 94% of students (2008 – present)

Associate Professor: Plastics Engineering, Department of Engineering and Technology
August 2012 – July 2017 (tenured in 2014)

- All duties as noted above
- Presented multiple seminars for industry professionals, covering plastics materials science, processing, and simulation
- Participated in and led search committees to recruit faculty

Program Director: Plastics Engineering, Department of Engineering and Technology
July 2009 – December 2015, January 2017 – August 2017

- Responsible for plastics engineering curriculum (program started at UW-Stout in August 2008)
- Led development and maintenance of state-of-the-art plastics materials characterization and processing laboratory, including budget and student lab assistant oversight
- Marketed plastics engineering program to students and industry to ensure program stability
- Liaise with industry to ensure curriculum taught in the classroom is relevant and cutting-edge
- Led effort to achieve and ensure ABET (Accreditation Board for Engineering and Technology) accreditation for plastics engineering program at UW – Stout (full accreditation in 2012)
- Advised and mentored plastics engineering students, including senior research projects

Assistant Professor: Plastics Engineering, Department of Engineering and Technology
August 2008 – July 2012

- All duties as noted above
- Wrote and taught courses for newly developed plastics engineering program
- Drafted proposals and coordinated with the plastics industry to develop a world-class undergraduate plastics materials characterization and processing laboratory

University of Wisconsin – Madison (Madison, WI)

Research Assistant: Polymer Engineering Center, Department of Mechanical Engineering
January 2004 – July 2008

- Performed compounding, and conventional and microcellular injection molding experiments of biodegradable plastics, as well as biodegradable plastic composites and nanocomposites
- Developed process involving microcellular injection molding for personal and consumer care products and packaging (**patent 20100198133**)
- Developed a novel method for the mass production of highly porous and interconnected biodegradable polymer matrices for tissue engineering scaffolds (**patent 20090017094**)
- Extensive use of design of experiments (DOE) to identify parameters affecting the shrinkage and warpage in microcellular injection molding and microcellular co-injection molding
- Specified hardware and developed custom data acquisition system using LabVIEW® for monitoring the microcellular injection molding process
- Ph.D. research topic on production of tissue engineering scaffolds was one of five public projects funded and housed in the Wisconsin Institutes for Discovery in Madison, WI

The Madison Group (Madison, WI)

Plastics Consulting Engineer Intern
January 2007 – July 2008

- Analyzed plastic failures to determine root cause of failure
- Developed detailed failure analysis reports for a variety of plastic components and assemblies

Phillips Plastics Corporation (Prescott, WI)

Development Engineer: Technology Center
January 2002 – December 2003

- Functioned in corporate engineering support role, serving nine manufacturing facilities
- Developed custom data acquisition system for magnesium injection molding process
- Member of R&D project involving the development of a process for extruding magnesium alloy in its semi-solid state (**patent 20060070419**)
- Served as a short-term project engineer in the medical device industry, managing 25 molds for a medical device assembly

Technical Skills

- Advanced theoretical and hands-on knowledge of scientific injection molding and process troubleshooting, including RJG and Priamus process monitoring and control systems
- Background in using and training with Autodesk Moldflow® to optimize part and mold design
- Extensive use of design of experiments (DOE) in injection molding
- Strong plastics materials science background applicable to part design, product development, and process design and optimization
- In-depth understanding of plastics material characterization (including rheological, thermal, and mechanical analysis techniques) and their relation to part performance and processing
- Understanding and interest in special injection molding processes and new molding technologies
- Background in additive manufacturing and how it applies to part design and prototype tooling

Professional Development Activities

- Attend and moderate technical sessions at the Society of Plastics Engineers (SPE) Annual Technical (ANTEC) conference (2004, 2005, 2008 – 2015, 2017 – 2019)
- National Plastics Expo (2003, 2006, 2009, 2012, 2015, and 2018)
- K Fair 2019 in Dusseldorf, Germany
- Arburg Technology Days, Lossburg, Germany (2010 and 2011)
- Participated in multiple on-campus seminars at UW – Stout detailing scientific molding techniques, taught by RJG, Inc. (2010 – present)
- Annual attendee and presenter at Milwaukee SPE Education Night (2009-present)

Professional Service

- Society of Plastics Engineers (2003 – present)
 - **Chair:** Injection Molding Division (2014 – 2015)
 - **Communications Chair:** Injection Molding Division (2009 – present)
 - **Technical Program Chair:** Injection Molding Division Technical Sessions (ANTEC 2014)
 - **Board of Directors:** Injection Molding Division (2008 – present)
 - **Faculty Advisor:** UW – Stout SPE Student Chapter (2011 – present)
 - **Board of Directors:** Next Generation Advisory Board (2010 – 2015)
 - **President:** UW – Madison SPE Student Chapter (2005 – 2008)
- Plastics Industry Association
 - **Member:** National Plastics Expo (NPE) Content Planning Committee (2019 – present)

Honors and Awards

- Fulton and Edna Holtby Manufacturing Engineering Chair (2018-2021)
- Wisconsin Plastics Educator of the Year – Milwaukee Society of Plastics Engineers (2017)
- Society of Plastics Engineers Injection Molding Division Engineer of the Year Award (2016)
- Outstanding Partner Award from the School of Education at UW – Stout (2012)
- Outstanding Teaching Award at UW – Stout (2011)
- UW – Stout G.A. Taft Manufacturing Engineering Professorship (2010 – 2013)
- Chester E. and Flora Jane LeRoy Fellowship (2005)

Presentations and Publications

Conference

- **Kramschuster, A.**, Cavitt, R., Ermer, D., Chen, Z., & Turng, L-S., “Warpage Comparison Between Microcellular and Conventional Injection Molding,” presented at SPE 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 SPE 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,” presented at SPE ANTEC, April 28-30, 2014, Las Vegas, NV.
- Claus, J., Pischlar, J., Holm, B., **Kramschuster, A.**, and Zheng, W., “A Method for Determining the Seven Coefficients of the Cross-WLF Equation,” SPE ANTEC, March 23-25, 2015, Orlando, FL.

Accepted

- Boud, E.D., **Kramschuster, A.**, and Mertes, S.D., “Method for Determining Cooling Time in Injection Molding Using Infrared Thermography,” SPE ANTEC 2020, San Antonio, TX.

Journal

- **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).

Professional Seminars

- **Kramschuster, A.**, “Processing Around Shear Heating, Weld Lines, and Crystallinity Issues”, seminar presented to industry professionals at the University of Wisconsin-Stout, Menomonie, WI, May 15, 2012, and Waukesha County Technical College, Pewaukee, WI, July 12, 2012.
- **Kramschuster, A.**, “Understanding Viscoelasticity in Processing”, seminar presented to industry professionals at the University of Wisconsin-Stout, Menomonie, WI, May 14, 2013, and Waukesha County Technical College, Pewaukee, WI, June 10, 2013.
- **Kramschuster, A.**, “Materials Science of Plastics in Engineering Terms – What You Really Need to Know”, seminar presented to industry professionals at the University of Wisconsin-Stout, Menomonie, WI, May 13, 2014, and Waukesha County Technical College, Pewaukee, WI, May 15, 2014.
- **Kramschuster, A.**, “Injection Molding Seminar Series”, seminars presented to Stratays at the University of Wisconsin-Stout, Menomonie, WI, January 20-22, 2015.
- **Kramschuster, A.**, “Introduction to Multi-Material Molding Part I”, seminar presented to industry professionals at the University of Wisconsin-Stout, Menomonie, WI, May 14, 2015, and Waukesha County Technical College, Pewaukee, WI, May 20, 2015.
- **Kramschuster, A.**, “Importance of Mechanical Properties in Interference Assemblies”, seminar presented to industry professionals at the University of Wisconsin-Stout, Menomonie, WI, May 5, 2016, and Waukesha County Technical College, Pewaukee, WI, June 8, 2016.
- **Kramschuster, A.** and Foltz, E., “Effective Interpretation of Injection Molding Simulation”, 2-day seminar presented at the University of Wisconsin-Stout, Menomonie, WI, August 18-19, 2015 and January 13-14, 2016.
- **Kramschuster, A.** and Zheng, W., “Materials Science of Plastics for Engineers”, 2-day seminar presented at the University of Wisconsin-Stout, Menomonie, WI, January 11-12, 2016.

- **Kramschuster, A.**, “Using Data to Drive Your Injection Molding Process”, seminar presented to industry professionals at the University of Wisconsin-Stout, Menomonie, WI, May 11, 2017, and Waukesha County Technical College, Pewaukee, WI, June 6, 2017.
- **Kramschuster, A.**, “Plastics Material Science Fundamentals”, seminar presented at the Manufacturing Advantage Conference, University of Wisconsin-Stout, Menomonie, WI, September 20, 2017.

Book Chapter

- **Kramschuster, A.** and Turng, L-S., “Fabrication of Tissue Engineering Scaffolds”, Chapter 17 in Handbook of Biopolymers and Biodegradable Plastics, 427-446, Elsevier (2013).

Patents

- Dougherty, Jr., E.P., Edgett, K., Turng, L.-S., **Kramschuster, A.**, Lee, J., Lacey, C., and Gorton, P., “Microcellular Injection Molding Processes for Personal and Consumer Care Products and Packaging,” USPTO document number 20100198133
- Turng, L.-S. and **Kramschuster, A.**, “Method of Fabricating a Tissue Engineering Scaffold,” USPTO document number 20090017094
- Johnson, K., Wang, N., **Kramschuster, A.**, Schousek, B., Pohl, S., and Bjork, T., “Feedstock Materials for Semi-Solid Forming,” USPTO document number 20060070419